



UNIVERSIDAD  
**PABLO<sup>d</sup>  
OLAVIDE**  
S E V I L L A

**DESIGN AND USE OF MANAGEMENT CONTROL  
SYSTEMS IN TEAM-BASED SETTINGS:  
EFFECTS ON PERFORMANCE**

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## **ABSTRACT**

This dissertation investigates empirically how organizations may design and use management control systems in team-based settings. Furthermore, it investigates how management control systems relate to social identity to influence team performance. Two features of management control systems are analyzed: the interactive control system, related to the style of use, and the group performance report, related to the design of control systems. The general hypothesis is that management control systems in team-based settings may enhance an autonomous motivation of team members. This motivation positively influences individual behavior and, therefore, team performance.

The hypothesis is tested in two experimental studies among 288 students in Pablo Olavide University in Seville (Spain). Two mediating models are presented. The first model analyzes the indirect effect of the interactive control system and social identity on team performance, via individuals' autonomous motivation. The second model analyzes the direct and indirect effect of group performance report and social identity on team performance, via social comparison processes. Overall, support was found for the two models.

This dissertation contributes to the extant literature in several ways. First, it introduces a new type of individual motivation (the autonomous) on management accounting literature which differs from the external motivation traditionally analyzed. Secondly, it combines economic literature and social psychology literature to provide new mediating models, which relate the individuals' autonomous motivation with both management control systems and team performance. Finally, this dissertation jointly analyzes accounting and psychological variables (management control systems and social identity), and how the relationship between them affects team performance.

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# CHAPTER 1: INTRODUCTION

## **1.1. Introduction**

## **1.2. The importance of studying team-based environments**

## **1.3. The importance of studying management control systems**

## **1.4. The importance of studying social identity**

## **1.5. The purpose of this dissertation**

## **1.6. Research question and contributions**

## **1.7. Dissertation outline**

## **References**

## **1.1 INTRODUCTION**

This dissertation analyses the relationship between the design and use of management control systems and social identity in team-based settings. It is also analyzed how that relationship effects on team performance. It presents two experimental studies conducted in Pablo Olavide University, in Spain, of three sets of hypotheses. The first set of hypotheses relates the use of management control systems, social identity and individual motivation in team-based settings. The second set of hypotheses relates the use of management control systems, social identity and team performance. The third set of hypotheses relates the design of management control systems, social identity, social comparison process and team performance.

This dissertation attempts to contribute to the literature in the fields of management accounting, social psychology and organizational behavior literature. In these fields and specifically in the relationships between management control systems, social identity, and individual motivation in team based-settings many questions still await academic enquiry. Furthermore, also in practice many questions arise from processes related to individual motivation and team performance and the role of management control systems and social identity may have in these processes. In this chapter I will



first motivate the importance of studying the relationship mentioned. In section 1.2 I will highlight the importance of studying team-based environments. Section 1.3 will highlight the importance of management control systems in organizations. In section 1.4 I will indicate the importance of studying social identity for team performance. Section 1.5 states the purpose of the dissertation. Section 1.6 presents the research question and the main contributions. Finally, section 1.7 describes an overview of the rest of the dissertation.

### 1.2 THE IMPORTANCE OF STUDYING TEAM-BASED ENVIRONMENTS

The last two decades it appears a phenomena involving organizational restructuring of both internal and external boundaries (Berry et al., 2009; Chenhall, 2008; Mathieu et al., 2008). Organizations have moved from the bureaucratic hierarchical form, considered ineffective in the context of increased competition and globalization, towards flatter, leaner and thus more responsive structures. A variety of methods have been deployed to bring about this increased flexibility. They included downsizing, the centralization of core activities, a growth in subcontracting or outsourcing, and the use of autonomous and cross-functional work teams (Berry et al., 2009).

Team-based structures have brought changes within organizations (Berry et al., 2009). Traditionally researchers analyzed hierarchical relationships between employees, that is, a relation between a manager who delegates work to an employee and the employee who performs the task (Eisenhardt, 1989; Jensen & Meckling, 1976). Management and economic literature have assumed self-interest behavior of employees, and have focused on analyzing how to align employees' interest with firm goals and objectives (Baiman, 1990). Nevertheless, team-based structures represent horizontal and collaborative relationships, where two or more employees work together to perform a task, and they may coordinate their resources and may cooperate to achieve their common goals (Adler & Chen, 2011; Mathieu et al., 2008). Although it assumes that team-based structures may help organizations to gain flexibility and efficiency, the use of team structures do not let automatically to performance

improvement (Lount & Phillips, 2007; Mathieu et al., 2008; Salas, Goodwin & Shawn, 2009).

Group performance improvement is frequently not reached because of two types of performance losses: coordination losses and motivation losses (Lount & Phillips, 2007). Coordination losses occur when group members are unable to accurately bring together information or resources to efficiently solve their task. Motivation losses occur when individuals in the group reduce their effort on the task (Lount & Phillips, 2007; Sprinkle, 2003). These motivation losses produce additional control problems to consider at team level, as social loafing, free-riding behaviors or collusion (Mathieu et al., 2008; Sprinkle, 2003). Researchers have suggested motivation works in a different way in collaborative environments (Adler & Chen, 2011; Gagné & Deci, 2005; Haslam, 2001; van Dick et al., 2009b). Despite the self-interest assumption governing traditional management and economic literature, evidence indicates that individuals respond to ethical, moral and social principles in collaborative environments (Bandiera, Barauky & Rasul, 2005; Gold & Sudgen, 2007; Sprinkle, 2003). Compared with a single-person setting, there are additional issues to consider in team-based settings, such as social identity, mutual monitoring or social comparison process, because teams can result in benefits of these processes (Birnberg, Luft & Shields, 2007; Haslam, 2001; Sprinkle, 2003). Researchers suggest a more autonomous or self-determinate motivation fits better with team-based structures (Gagné & Deci, 2005; Ryan & Deci, 2000). Therefore, future examination is required to analyze how individual motivation works in team-based settings, and how organizations can gain benefits of team-based structures (Adler & Chen, 2011; Berry et al., 2009; Mathieu et al., 2008).

### 1.3 THE IMPORTANCE OF STUDYING MANAGEMENT CONTROL SYSTEMS

The fundamental purpose of management control systems is to enhance firm value by ensuring the effective and efficient use of scarce resources (Berry et al., 2009; Sprinkle, 2003). Management control systems provide control information to

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managers and employees, and take different forms, such as budgets, cost systems, incentives or performance reports (Berry et al., 2009; Rowe, 2004). The information serves two important roles in an organization: (1) to provide some of the necessary information for planning and decision-making, and (2) to motivate individuals (Sprinkle, 2003). Two different features of management control systems have been highlighted for these two roles: the design and the use of control information (Chenhall & Morris, 1986; Malmi & Brown, 2008; Simons, 1995, 2000).

On one hand, traditionally management accounting researchers has focused on the optimal design of management control systems to align employees' interests with managers and/or owners interests to achieve the organization's goals and objectives (Brown, Evans & Moser, 2009). Researchers analyzed technical characteristics as the proportion of financial versus non-financial measures in the performance measurement system; the proportion of variable pays in the compensation system, or the presence or absence of control (Drake, Wong & Salter, 2007; Lau & Moser, 2008). However, researchers suggest traditional designs, such as individual or fixed incentives which fit with single-work setting, are not suitable to collaborative environments because do not lead to group performance improvement (Libby & Thorne, 2009; Román, 2009; Towry, 2003). Collaborative environments present new control problems, such as free-riding, collusion or conflict, and the manner in which management control systems should be designed at this context is yet unclear (Sprinkle, 2003; Birnberg, 2011; Román, 2009).

On the other hand, management accounting researchers have analyzed different styles of uses of management control systems (Henri, 2006; Naranjo-Gil & Hartmann, 2006, 2007; Simons, 1995; 2000). Simons (1995) argued that firms often have management accounting systems with similar technical characteristic. However, they differ in the way in which these control systems are used to achieve particular organizational purposes though (Abernethy, Bouwens & van Lent, 2010; Naranjo-Gil & Hartmann, 2007). Simon's framework of levers of control (1995, 2000) differences two opposites styles of use of management control systems: the diagnostic and the interactive. Diagnostic use represents the traditional feedback role as control systems are used to monitor and reward the achievement of pre-established organizational goals. Diagnostic use is focused on correcting deviations and represents a negative force

(Henri, 2006). Interactive use represents a positive force and focuses attention and forces dialogue and communication throughout organizational members (Abernethy et al., 2010; Henri, 2006). Traditionally, management accounting literature has focused on the effects of this interactive use at organizational level. However, recent researchers point to the importance of the positive force of the interactive use to influence individual motivation in team-based structures (Adler & Chen, 2011; Kominis & Duda, 2012). Nevertheless, the process through which the interactive use influences individual motivation and behavior is yet unclear (Adler & Chen, 2011; Tessier & Otley, 2012).

### 1.4 THE IMPORTANCE OF STUDYING SOCIAL IDENTITY

Social Identity Theory argues that the potential of a team depends not only on the skill, knowledge and ability of the people in the team, but also on their ability and motivation to feel the team as a unit (Lembke & Wilson, 1998; Tajfel & Turner, 1986). That is, if an individual defines themselves in terms of their group membership and ascribe characteristics that are typical of the group to the self, thus psychologically the group becomes part of the individual (Van Knippenberg, 2000). Therefore, social identity can avoid the motivation losses problem at team level (Lount & Phillips, 2007).

Social identity has been related to a wide range of team outcomes, such as team cohesion, internalization of group norms, cooperation among team members and team commitment (Haslam et al, 2006; van Dick et al., 2009a,b). However, related to team performance, researchers find different effects, because in some situations social identity do affect team performance, but not in others (see Towry, 2003; van Knippenberg, 2000; van Dick et al., 2009a,b). It seems that social identity is not an automatic process but depends on how individuals interpret the social context in which they operate or work (Hogg & Terry, 2000; Rowe et al., 2008; Towry, 2003).

Social identity theory assumes individual behavior is a consequence of interplay between social and psychological factors. Social factors have to do with the objective features of the world that an individual confronts and psychological factors are associated with the individual's interpretation of that world (Haslam, 2001). Therefore, organizational variables, such as accounting and control practices, are part of the working environment and interact with social identity to influence team performance (Towry, 2003; van Dick et al, 2009b).

### 1.5 THE PURPOSE OF THIS DISSERTATION

Two types of mechanisms have been highlighted to influence team performance: organizational features such as accounting and control practices, and individual features such as social identity (Birnberg et al., 2007; van Dick et al., 2009a,b).

Academic research related to management control systems and team performance is still limited, in spite of the growing body of studies in recent years (Birnberg, 2011; Libby & Thorne, 2009; Román, 2009). Management accounting researchers have realized that management control systems that traditionally worked in hierarchical structures produce mixed and confused results in team-based environments (see Coletti et al., 2005; Libby & Thorne, 2009; Román, 2009). For example, it seems that individual accounting practices do not influence team performance (Libby & Thorne, 2009, Rowe, 2004). Therefore, management accounting researchers have recognized the design and use of management control systems should be adapted to collaborative environments (Berry et al., 2009; Coletti et al., 2005; Sprinkle, 2003; Román, 2009). However, it is still unclear how to adapt these control systems at team level to achieve performance improvements (Adler & Chen, 2011). For example, some researchers posit to the design of control practices as group level (Libby & Thorne, 2009; Román, 2009). However, some of these practices designed at team level, as group incentives, enhance free-riding behaviors within the team (Rowe, 2004; Rowe et al., 2008). Nevertheless, other researchers suggest this group design may be applied to other control practices, instead of incentives, such as performance reports because allow mutual monitoring and social comparison processes within teams (Rowe, 2004; Román, 2009). While others researchers suggest organizations may change the style of

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use of control information within teams because creates an affective bond between teammates (Adler & Chen, 2011; Tessier & Otley, 2012). Therefore, some researchers stress the importance of the design of control systems, while others stress the importance of the style of use of control information to influence team performance. I posit in this dissertation these mixed results may be explained if the models incorporate a variable so far has been treated as one-dimensional in management accounting literature: the individual motivation (Adler & Chen, 2011; Wong-on-Wing, Guo & Lui, 2010). Traditionally management accounting research assumes individuals are motivated by external rewards and controls, that is, assumes individuals are externally motivated (Adler & Chen, 2011; Malmi & Brown, 2008; Wong-on-Wing, Guo & Lui, 2010). Nevertheless, individuals have different type of motivations; an external represents only one type (Adler & Chen, 2011; Gagné & Deci, 2005).

Recent studies suggest that team work researchers might focus on an autonomous individual motivation, such as identified (Adler & Chen, 2011; Gagné & Deci, 2005; Wong-on-Wing, Guo & Lui, 2010). This motivation is experienced as somewhat internal or self-determined by the own individual instead of an external motivation, which is experienced as somewhat controlled by others (Adler & Chen, 2011; Gagné & Deci, 2005). External motivation is associated with negative effects' on individuals' behavior, as lower satisfaction and effort (Adler & Chen, 2011; Malmi & Brown, 2008; Meyer et al., 2004). In spite of these negative effects, management accounting research has largely focused on the relation between management control systems and external motivation (Malmi & Brown, 2008). This dissertation focuses on the individual autonomous motivation in team-based settings.

In this dissertation I examine how organizations may design and use management control systems to increase individuals' autonomous motivation and how this motivation influences individual performance within teams (Adler & Chen, 2011; Tessier & Otley, 2012; Ryan & Deci, 2000; Román, 2009). I posit that both features, the design and use of control systems, can increase individual autonomous motivation (Adler & Chen, 2011). The key process is that control systems may increase mutual monitoring, interaction and involvement between team members to influence individuals' autonomous motivation in collaborative environments (Adler & Chen,

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2011; Meyer & Herscovitch, 2001; Román, 2009). I present two mediating models, where individual motivation and mutual monitoring are the mediating variables. Oppositely to traditional management accounting researchers, who focused on additive models, this dissertation presents two intervening models that allow to explain the processes by which the design and use of management control systems affect group performance (Birnberg et al., 2007).

High levels of identification and association of team members with the group work may also increase individual autonomous motivation (Adler & Chen, 2011; Meyer & Herscovitch, 2001; Meyer et al., 2004). Identification refers to social identity (Adler & Chen, 2011; Haslam, 2001; van Knippenberg, 2000). Therefore, social identity is related to individual autonomous motivation (Adler & Chen, 2011). Moreover, social identity posits that individuals can be powerfully motivated by group goals, when their identities as members of a group have sufficient psychological salience for them (Haslam, 2001). That is, social identity might be cognitively activated in individual's mind to influence his behavior (van Knippenberg, 2000). Therefore salience is a key process for influencing team performance through social identity. And salience depends on the context where the individual is working (Towry, 2003; van Dick et al., 2009a,b). Accounting and control practices can reframe context (Rowe, 2004; Rowe et al., 2008). Yet the manner in which accounting and control practices and social identity interact is not clear (see Rowe, 2004; Towry, 2003).

In this dissertation I analyze two effects related to social identity and team performance. First I analyze the direct effect of social identity on individuals' autonomous motivation, and team performance. I also suggest a mediating model, where the individual motivation is the intervening variable between social identity and team performance. Secondly, I analyze the relation between the design and use of management control systems and social identity, because previous researchers suggest a moderator relation between them to influence team performance (Towry, 2003; van Dick et al., 2009b). In summary, I follow organizational behavior and management accounting researchers recommendations: team work researchers may consider mediating and moderator variables in their models for providing a more comprehensive knowledge of team effectiveness and performance (Birnberg et al., 2007; Mathieu et al., 2008).

### 1.6 RESEARCH QUESTION AND CONTRIBUTIONS

The general research question addressed in this dissertation is the following:

***How are management control systems designed and used in team-based settings to increase team members' motivation and performance?***

To answer this research question I perform three studies. First, I develop a model which relates the use of management control systems with individual autonomous motivation within teams. The model proposes two mechanisms to enhance an autonomous motivation (i.e. the identified motivation): the interactive use of management control systems and the social identity of the team (Adler & Chen, 2011; Haslam et al., 2006; Meyer & Herscovitch, 2001). The model is tested by a psychology-based experiment conducted in Pablo Olavide University with 120 students. The use of experiments enables to analyze cause-effect relationships between management accounting practices and individual and group behavior. The results of this study support the model. These indicate that organizations can enhance team members' identified motivation by increasing the social identity of the team and also by using control systems interactively.

In the second study I develop a mediating model where identified motivation is the intervening variable. The model proposes the interactive use of management control systems and social identity influence team performance via team members' identified motivation (Haslam, 2001; Ryan & Deci, 2000; Tessier & Otley, 2012). The model is tested by the same experiment of the first study. The mediating model is tested using the partial least squares technique, which allows estimate models with small sample sizes (Chin, 1998). The results of this study confirm there is no direct effect of the interactive use of control systems on team performance, but this effect is via team members' identified motivation. The results also support that the relation between social identity and team performance is mediated by the identified motivation of team members.

The third study introduces a control mechanism related to the design of control information within teams which is the performance feedback or reporting. I focus on



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the informational feature of this practice instead of the control feature. In this model I introduce an intervening variable which is pushed by the design of group performance reports: the social comparison process between team members. Following, management accounting literature and psychology literature, the model proposes the design of group performance reports increases team performance, mediated thorough social comparison processes. Furthermore, I introduce the level of social identity as a moderator variable, because influences how control information is interpreted within teams (Kocher & Sutter, 2007; Rowe, 2004; van Dick et al., 2009a). This model was tested by a second experiment conducted in Pablo Olavide University with 144 students. The results of the experiment point out the informational feature of performance feedback produces two types of effects on team members' performance: one direct and the other via social comparison process. These effects are stronger in teams with high social identity than in teams with low social identity.

This dissertation provides a contribution to the management accounting research and related fields such organizational behavior and psychology. Moreover, the findings of this study are also relevant for practitioners. Related to management accounting literature, this dissertation provides insights related to two features of management control systems: the use and the design. On one hand, this research project is the first to my knowledge that examines the direct effects of the interactive use of management control systems on individual and group behavior. Combining social psychology theories with management accounting literature, this dissertation sheds some light about the process by which the interactive use of control systems influences team members' behavior. I posit that this relation is no direct, but indirect via the identified motivation of individuals (Adler & Chen, 2011). The use of intervening models provides a more comprehensive knowledge about team performance by analyzing mediating variables, such as motivational and affective states, between organizational inputs and team outcomes (Birnberg et al., 2007; Mathieu et al., 2008). On the other hand, this dissertation is focused on one particular feature of performance reports, the informational feature. Researchers have largely focused on the positive effects of the control feature of performance reports (that is, how people act when they know their performance is controlled). However, I focus on how the design of performance information provided to team members influences their motivation and performance (maintaining control constant, between the different types of designs). Researchers

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have stressed the informational feature enhances two processes within teams: a cognitive process (that is, providing information to teammates related to the context they are working -a group context or an individual context-) and a social comparison process (the individual compares his performance with the performance of his teammates). I posit only a given design of performance feedback, as aggregated group information, produces positive effects on team members' performance, through these two processes. However, if organizations provide too detail information related to teammate's performance, the effects of the social comparison process could be negative for team performance.

Secondly, this dissertation provides a contribution to the organizational behavior literature, related to social identity and social comparison process. On one hand, recent social identity researchers suggest that the relation between social identity and group performance is not clear. The reason is social identity has been traditionally analyzed as one-dimensional concept, whereas it is a multidimensional concept (van Knippenberg, 2000; van Dick et al., 2009a,b). This dissertation provides empirical evidence of the relation between the two dimensions of social identity (salience and identification) and group performance. Moreover, I analyze how management control systems, as a contextual factor, can directly push the salience of the group identity, but not group identification. On the other hand, social comparison research has been applied a wide variety of areas of human functioning. Nevertheless, researchers highlight few studies have analyzed social comparison processes in one of the most popular settings for investigating human behavior, the teamwork (Brown et al., 2007; Greenberg, Ashton-James & Ashkanasy, 2007). When people work closely together in a group, they have many opportunities to compare with teammates. Furthermore, I posit organizations can activate this social comparison process using practices and mechanisms of management control systems, as incentives or performance feedback. Nevertheless, although traditionally researchers enhance the positive effects of social comparison process on individual behavior, the results of this dissertation highlights that this process has the potential of being destructive within teams (Molleman, Nauta & Buunk, 2007; Spence et al., 2011).

Finally, the results of this dissertation are also important for practice. First, I posit organizations can increase group performance only changing the style of use of

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control information within teams. Researchers have extensively focused on the design of management control systems (i.e. group or individual rewards, horizontal or vertical incentives), I suggest the style of use of the control information can also influence individual motivation in collaborative settings. Accounting and control practices that enhance communication, participation and interaction processes are, therefore, mainly important in team-based settings (Adler & Chen, 2011; Berry et al., 2009; Chenhall, 2008). Secondly, organizations should be careful when design accounting and control practices in collaborative environments because individuals have different reactions depending on the level of their team identity (Towry, 2003, van Dick et al., 2009a,b). When individuals are highly identified with their group, too detailed performance information related to teammates could be negative for team performance. If teammates free-ride, the other team members can follow these practices assuming it represents the standard behavior of the team. Therefore, the level of team identity might be considered when organizations design the amount of performance information provided for team members. Finally, considering the importance of the effects of social comparison processes between individuals, organizations should carefully analyze how control practices may be designed within teams. In teams with a high social identity, a performance report which displays free-riding behaviors within the group can enhance negative social comparison processes between team members. As a result, free-riding behaviors become common in the group. Therefore, it is better to design control mechanisms which do not push these comparison processes within teams (Molleman et al., 2007; Spence et al., 2011).

### 1.7 DISSERTATION OUTLINE

The structure of this dissertation is as follow. In Chapter 2, I present the theories used, the variables analyzed, and the relation expected between variables. Chapters 3, 4 and 5 present the three studies developed. In Chapter 3 I present the first study entitled “The use of Management Control Systems, Social Identity and Team Commitment”. In Chapter 4 I present the second study entitled “The effect of Interactive Control Systems and Social Identity on team members’ motivation and performance”. In Chapter 5 I present the third study entitled “The effect of Group Performance Report

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on cooperative effort”. In each Chapter I develop the research hypotheses, describe the research method and the results, and I end with some conclusions and discussion about the results. Finally, Chapter 6 summarizes the research findings and gives some suggestions for future research.

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### 2.1 INTRODUCTION

In this chapter firstly I discuss the literature deal with management control systems, social identity, individual motivation and team performance. Secondly, I introduce the main variables of this dissertation: management control systems, social identity, and social comparison processes. Finally, I present the expected relations between variables, which support the three studies of the dissertation.

I describe the foundations of the different theories used: an economic theory (agency theory), and two social psychology theories (self-determination and social identity theories). Assuming that individuals respond to ethical, moral and social principles in addition to economic incentives, researchers suggest that a behavioral-economic approach may help to understand individual behavior (economic and social) within organizations and teams (Adler & Chen, 2011; Birnberg, 2011; Birnberg, Luft & Shields, 2007)

I also summarize the main variables of this dissertation. First, I analyze differences on the use of management control systems and also on its design, since both features have been suggested to influence individual behavior (Chenhall & Morris, 1986; Bouwens & Abernethy, 2000; Tessier & Otley, 2012). Related to the use, I follow Simons' framework of Levers of Control and I focus on the interactive use of management control systems. Related to the design, I describe differences in the design of group performance reports, analyzing an aggregated form (where only group information is present) and a detailed form (which combines group and individual information). Secondly, I introduce two dimensions related to the social identity variable: identification and salience, since psychology researchers have suggested these two dimensions produce different effects on individual behavior (van Dick et al., 2009a). Thirdly, I analyze social comparison processes within teams, following organizational behavior research (Molleman, Nauta & Buunk, 2007).

Finally I analyze the relation between management control systems (design and use) and team performance, where autonomous individual motivation and social comparison process are present. I also analyze the relation between social identity and

team performance, where autonomous individual motivation is present. Then I analyze the relation between management control systems and social identity.

## 2.2 THEORIES

### 2.2.1 Agency theory

Agency theory is directed at the ubiquitous agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work. Agency theory is concerned with resolving two problems: the agency problem and the problem of risk sharing. Agency problem arises when the desires or goals of the principal and agent conflict, and it is difficult or expensive for the principal to verify what the agent is actually doing. Risk sharing problem arises when the principal and agent have different attitudes toward risk. The problem here is that the principal and the agent may prefer different actions because of the different risk preferences (Eisenhardt, 1989).

Agency theory attempts to describe the relationship between the principal and the agent using the metaphor of a contract. The focus on the theory is determining the most efficient contract governing the principal-agent relationship given assumptions about people (e.g. self-interest, bounded rationality, risk aversion) and organizations (e.g. goal conflict among members). Table 2.1 summarizes Agency Theory overview.

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**Table 2.1.(1): Agency Theory overview**

Key idea	Principal-agent relationships should reflect efficient organization of information and risk-bearing costs.
Unit of analysis	Contract between principal and agent
Human assumptions	Self-interest, bounded rationality, risk aversion
Organizational assumptions	Partial goal conflict among participants. Efficiency as the effectiveness criterion. Information asymmetry between principal and agent
Information assumption	Information as a purchasable commodity
Contracting problems	Agency (moral hazard and adverse selection) Risk sharing
Problem domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g. compensation, regulation, leadership, impression management, whistle-blowing, vertical integration, transfer pricing)

Source: Eisenhardt, 1989.

Agency theory has been applied to organizational phenomena such as compensation, rewards, board relationships, ownership and financing structures, vertical integration, and innovation. Overall, the domain of the agency theory is relationships that mirror the basis agency structure of a principal and an agent who are engaged in cooperative behavior, but have different goals and different attitudes toward risk (Brown, Evans & Moser, 2009; Eisenhardt, 1989).

However, researchers point out agency theory assumptions are violated in some situations (Brown et al., 2009; Bandiera, Barankay & Rasul, 2005; Gold & Sudgen, 2007). Traditionally, it is almost presupposed that agency is invested in individuals: each person acts on her own preferences and beliefs. Opposing to this orthodoxy is a body of literature which allows teams of individuals to count as agents, and which seeks to identify a mode of team reasoning that are used by individuals as members of a team (Gold & Sudgen, 2007; Haslam, 2001). This team reasoning is different from the individual reasoning which is based on the assumption of self-interested behavior. Therefore, individuals' behavior within teams may be different from individuals' behavior in a single work situation. In team-based settings individuals work in a horizontal structure, while in traditional single-work environments there is a hierarchical relation between the agent and the principal (Coletti et al., 2005; Brown et al., 2009). In fact, there are many examples in social life that demonstrate that individuals do not always act selfishly (i.e. people who voluntary participate or work

in non-governmental organizations). Moreover, also on empirical studies focus on Prisoner's Dilemma situations, the proportion of participants choosing to defect is typically between 60 and 50 percent, therefore, most of participants choose to cooperate<sup>1</sup>. Researchers suggest self-interested assumption related to individual behavior do not fit with collaborative environments, where other types of individual motivation fit better (Adler & Chen, 2011; Gagné & Deci, 2005).

In sum, agency theory traditionally has been applied to vertical and hierarchical relationships between a principal and an agent. This theory assumes self-interested behavior of individuals in any situation. However, there are situations where individuals choose to cooperate and align their objectives with other teammates, leaving aside their self-interested behavior. It seems that individual motivation in collaborative environments works in a different way, compare to single work environments.

### 2.2.2 Self-determination theory

Self-determination theory suggests the assumption of self-interest behavior of individuals describes a specific type of individual motivation, whereas individuals have different types of motivations (Deci & Ryan, 1985; Ryan & Deci, 2000). Motivation represents an intention to act and it ranges from amotivation to intrinsic motivation (Deci & Ryan, 1985; Gagné & Deci, 2005; Meyer, Becker & Vandenberghe, 2004). Amotivation involves a lack of intentions, while intrinsic motivation involves people doing an activity because they find it interesting and derive spontaneous satisfaction from the activity itself. Extrinsic motivation is between amotivation and intrinsic motivation, and requires an instrumentality between the activity and some separable consequences such as tangible or verbal rewards (Ryan & Deci, 2000; Wong-on-Wing, Guo & Lui, 2010). Thus, satisfaction comes not from the activity itself but rather from the extrinsic consequences to which the activity leads.

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<sup>1</sup> The Prisoner's Dilemma represents a situation where two players must choose if cooperate or defect in a game. The unique equilibrium, assuming self-interested behaviors of individuals, is for both players to defect. Yet both players would be better off if each chose cooperate instead of defect (see Golden & Sudgen, 2007).

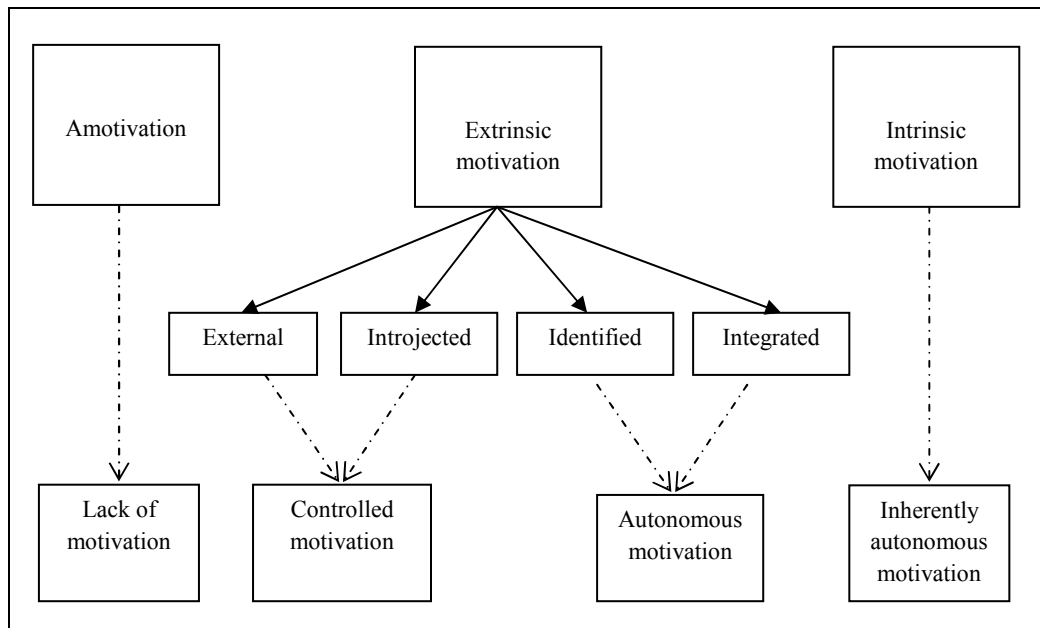
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Central to self-determination theory is the distinction between autonomous motivation and controlled motivation (Wong-on-Wing et al., 2010). Autonomy involves acting with a sense of volition and having the experience of choice, while controlled involves acting with a sense of pressure, a sense of having to engage in the actions (Gagné & Deci, 2005). Intrinsically motivated behavior is prototypically autonomous. However, extrinsically motivated behavior can vary in the degree to which it is autonomous versus controlled.

It can be distinguished four types of extrinsic motivation: **external**, **introjected**, **identified** and **integrated** (Adler & Chen, 2011; Gagné & Deci, 2005). **External** means that it is initiated and maintained by contingencies external to the person (e.g. I do the task to obtain a monetary reward). The other three types of extrinsic motivation are related to internalization, which is defined as people taking in values, attitudes, or regulatory structures, such that the external regulation of a behavior is transformed into an internal regulation (e.g. I work even when the boss is not watching) (Gagné & Deci, 2005). **Introjected** motivation represents a regulation that has been taken in by the person but has not been accepted as his or her own (e.g. I work because it makes me feel like a worthy person). **Identified** motivation represents people who identify with the value of a behavior for their own self-selected goals; therefore, the behavior is more congruent with their personal goals and values (e.g. studying for an upcoming exam rather than going out with friends). Finally, **integrated** motivation represents people which have a full sense that the behavior is an integral part of who they are (e.g. scientist who chooses to spend long hours in the lab in the pursuit of knowledge).

Intrinsic, integrated and identified motivation are the autonomous motivation, while introjected and external motivation are the controlled motivation (Gagné & Deci, 2005; Wong-on-Wing et al., 2010). Figure 2.2 summarizes the type of motivations:

**Figure 2.2.(1): Type of motivations: The self-determination continuum.**



Source: own elaboration, based on the Gagné & Deci (2005).

Organizational behavior researchers have analyzed the effects of these types of motivation on individual behavior (see Ryan & Deci, 2000; Meyer et al., 2004). Over the past decade, researchers have stressed the use of rewards and punishments increase the external individual motivation and have a powerful impact on behavior (Brown et al., 2009; Malmi & Brown, 2008; Meyer et al., 2004). However, external regulation can have negative consequences on long-run tasks and also on collaborative environments (Adler & Chen, 2011; Meyer et al., 2004). An autonomous motivation works better in settings where coordination and cooperation is needed. Researchers highlight the identified motivation at group level because has been associated with greater task persistence, affective commitment, work group climate and pro-social behaviors (Adler & Chen, 2011; Meyer et al., 2004). Following these suggestions, researchers are becoming interested in the processes that can push this autonomous individual motivation and its consequences (see Adler & Chen, 2011; Wong-on-Wing et al., 2010).

Two types of mechanisms have been highlighted in the literature to increase individual identified motivation: mechanisms that prompt high levels of interaction and interdependence between individuals, and high levels of identification with the group

or the social category (Adler & Chen, 2011, p. 68; Meyer & Herscovitch, 2001). Psychological states, such as social identity, are related to identification mechanisms (Adler & Chen, 2011; Haslam, 2001).

In sum, although traditionally economic and management literature assume one type of individual motivation, that is, the external motivation, Self-Determination theory posits individuals have different types of motivations. Furthermore, it is suggested that an identified motivation fits better with collaborative environments, because the individual needs to feel a sense of autonomy in team-based work. Two types of mechanisms have been suggested for increasing the individual identified motivation: involvement and identification. Therefore, social identity may be related to individual identified motivation.

### 2.2.3 Social identity theory

Social identity theory is concerned with how individuals' mind and behavior are influenced by other people (Birnberg et al., 2007; Haslam, 2001). Social identity theory was originally developed in an attempt to understand the psychological basis of intergroup discrimination: Why do group members malign other groups and what makes people so often believe that their own group is better than others?

This theory analyzes how people's cognitions and behavior are affected. Two processes are suggested. On one hand, individual behavior could be represented in terms of a bipolar continuum, at one extreme it is interpersonal behavior (character and motivations of the individual as an individual), and in the other extreme it is intergroup behavior (behavior derives solely from the person's group membership) (Tajfel, 1978; Haslam, 2001). Related to the intergroup behavior, individuals categorize their social world into in-groups (e.g. an individual's work team) and out-groups (e.g. work teams in other organizations). And intergroup behavior comes into play to the extent that behavior is defined at the intergroup extreme of the continuum. Individuals want to maximize their similarities with the in-group behavior (Lount & Phillips, 2007). Tajfel (1978) suggests that intergroup and interpersonal behaviors are qualitatively distinct from each other.

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On the other hand, people's cognition and behavior are affected by perceived social structure (Haslam, 2001; van Knippenberg, 2000). That is, where the individuals place themselves on the interpersonal-intergroup continuum is a consequence of interplay between social and psychological factors. Social factors have to do with the objective features of the world of the word an individual confronts and psychological factors are associated with the individual's interpretation of that world. Thus, the way we see ourselves depends both on events happening in the world around us and on the perspective we take on those events.

Two sub-processes are involved in social identity to influence individual behavior: categorization and depersonalization (O'Fallon & Butterfield, 2012). First, categorization is the process by which an individual is classified into a social category based on a variety of characteristics, such as age, race, status, religion or organizational membership. Psychology research highlights that contextual factors, as accounting and control practices, can help categorization because remind a specific social category (see Haslam, 2001; Towry, 2003, Rowe, 2004). Secondly, depersonalization occurs when the individual begins to act and think in accordance with the groups' perceived prototypical characteristics, such as norms, values and beliefs (Birnberg et al., 2007; O'Fallon & Butterfield, 2012; van Dick et al., 2009a,b). This refers to a process of which the self comes to be perceived as categorically interchangeable with other in-group members. Therefore, when depersonalization process is initiated, the individual begins to be motivated by group goals instead of his individual goals (Haslam, 2001).

Social identity theory argues that the potential of a team (the in-group) depends not only on the skill, knowledge and ability of the people in the team, but also on their ability and motivation to feel the team as a unit (Lembke & Wilson, 1998). Social identity has been related to a wide range of factors related to team performance, as team cohesion, internalization of group norms, commitment and cooperation (see Haslam, 2001).



### 2.2.4 Summary and conclusions

In this section, I summarize the relations between the three theories described above. Firstly, economic, organizational behavior and management accounting research has largely focused on agency theory, which is focused on vertical and hierarchical relationships and external individual motivation (Gold & Sudgen, 2007; Mundy & Brown, 2008). However, self-determination theory points out that external motivation works worse in collaborative environments instead of an autonomous motivation (Adler & Chen, 2011; Meyer et al., 2004; Deci & Ryan, 1985). Therefore, researchers interested on team performance might focus on individual autonomous motivation, such as team members' identified motivation.

Secondly, self-determination theory suggests different processes for enhancing individual identified motivation: involvement, participation, interdependence or identification (Adler & Chen, 2011; Meyer & Herscovitch, 2001; Gagné & Deci, 2005). I follow this suggestion and I analyze which features of the design and use of management control systems fit better with these processes (Won-On-Wing, Guo & Lui, 2010). Furthermore, I analyze a psychological variable, social identity, which also is related to the identification process within the group (van Dick et al., 2009a,b).

Finally, I analyze the relation between management control systems and social identity, since researchers suggest management control systems are contextual factors that can influence salience of the social category (Towry, 2003; van Dick et al., 2009b). In summary, this dissertation analyzes the joint effect of management control systems and social identity on team members' identified motivation and performance.

## 2.3 VARIABLES

### 2.3.1 Management Control Systems

Management control systems (MCS) are defined as a combination of control mechanisms designed and used by organizations to enhance firm value by ensuring the

effective and efficient use of scarce resources (Sprinkle, 2003). Researchers highlight two roles of MCS: the decision-facilitating role and the decision-influencing role (Malmi & Brown, 2008; Sprinkle, 2003). The decision-facilitating role provides information for planning and decision-making, that is, to improve employees' abilities to make organizationally desirable decisions. The decision-influencing role is related to individual motivation. Agency theory has been traditionally used to analyze the decision-influencing role within organizations, since it attempts to explain the optimal design of management control systems (the contract) between a self-interested principal and one or more self-interested agents (Brown et al., 2009; Sprinkle, 2003). Two different features of MCS can be used to the decision-influencing role of MCS: the type of use and the type of design of control information (Naranjo-Gil & Hartmann, 2006, 2007; Malmi & Brown, 2008).

On one hand, the style of use of MCS can enhance the firm value. Simons' framework identifies two types of uses of the formal control systems: a diagnostic and interactive use (Simons, 1995; 2000). A diagnostic use represents the traditional feedback role as MCS are used on an exception basis to monitor and reward the achievement of pre-established goals. The interactive use of MCS represents a positive force as MCS are used to expand opportunity-seeking and learning throughout the organization by reflecting signals sent by top managers. Researchers have analyzed how these two types of uses influence firm outcomes, as organizational capabilities (as innovation, organizational learning, market orientation or entrepreneurship), strategic implementation (cost strategy or flexibility strategy), strategic change or organizational performance (see Abernethy & Brownell, 1999; Henri, 2006; Kominis & Duda, 2012; Naranjo-Gil & Hartmann, 2006, 2007; Widener, 2007). The revised framework of Simons Levers of Control by Tessier & Otley (2012) highlighted that employees have different perceptions to controls, depending of the style of use. These perceptions can influence individual motivation and behavior. However there is no empirical evidence of a cause-effect relation between the use of MCS and the individual and group motivation and performance (Adler & Chen, 2011, Tessier & Otley, 2012).

On the other hand, the design of MCS has been defined in terms of the perceived usefulness of several information characteristics (Chenhall & Morris, 1986; Bouwens

& Abernethy, 2000; Naranjo-Gil & Hartmann, 2006). The main dimensions of the design of MCS are scope, integration, aggregation and timeliness. The scope dimension has three sub-dimensions: focus, quantification and time horizon. It is viewed as a continuum with narrow scope at one hand and broad scope at the other. The features of data are related to monetary or non-monetary, historical data or future, internal or external. The integration dimension includes information about the activities of others. The aggregated dimension provides summary information by functional area, subunit, team, or time period. Finally, timeliness has two dimensions: frequency of reporting (how often information is provided) and speed of reporting (time lag between when a person requests information and when it is made available). In spite of the fact that all dimensions have been shown to influence individual behavior, recent researchers stress that aggregation is an important feature at team level, because it allows other processes which are not present in individual environments, as mutual monitoring and social comparison process (Rowe, 2004; Rowe et al., 2008; Román, 2009).

Aggregation can be applied to different management control mechanisms, as budgets, performance reports and/or incentives. Nevertheless, researchers highlight the importance of performance reports at team level because enhance two types of processes, the control process (e.g. information about the level of goals reached by the group) and the informational process (e.g. information about the context and also about the performance of other teammates) (see Coletti et al., 2005; Rowe et al., 2008; Román, 2009). While previous researchers have analyzed the control feature of performance report in team-based settings, the effects of the informational feature is yet not clear (Coletti et al., 2005). The important cue is the manner in which performance reports are presented to individuals, that is, if only aggregated team information is presented, or if also individual information related to teammates is presented (Rowe et al., 2008). Two processes can be developed by the informational feature of performance reports: a cognitive process (that is, the individual receives information related to the context where s/he works) and a social comparison process (that is, the individual can evaluate his abilities against other team members). However, it is not clear how these two processes work within teams and influence team members' motivation and behaviour (Greenberg, Ashton-James & Ashkanasy, 2007; Molleman et al., 2007; Rowe, 2004; Towry, 2003).

### 2.3.2 Social identity

Social identity states that a group or social category emerges when a number of people perceive themselves to be members of the same social category, and as soon as individuals categorize themselves as members of a social category, they will act in terms of this membership (Haslam, 2001; Hogg & Terry, 2000). Social identity researchers are focus on explain inter-group phenomena. Its main proposition is individuals strive to maintain or enhance a positive social identity by comparing their own group with relevant other groups.

Social identity can be divided in two dimensions: identification and salience (van Dick et al., 2009a). Identification leads individuals to perceive themselves in terms of the characteristics they share with other members of their in-groups (their shared social identity) rather than in terms of the characteristics that differentiate them from other individuals (their personal identity) (van Knippenberg, 2000). Identification blurs the distinction between self and the group, and turns the group psychologically part of the self. The salience dimension describes the extent to which a specific group, among the many social categories that an individual has in a given moment, is relevant for his thinking, feeling and behavior. A social category is more likely to be salient if both the category and the situation match the individual's expectations and if reality matches these expectations (van Knippenberg, 2000; van Dick et al., 2009a). That is, any event that speaks to a group membership (i.e. rather than to the individual) may make the social identity based in that group membership salient (van Knippenberg, 2000). For example, the prospect of a merger may render organizational identity salient, or conflict or competition between work groups may render work group identity salient. Furthermore, identity salience may endure for longer periods or may change in a matter of moments (Hogg & Terry, 2000; Van Knippenberg, 2000).

In summary, even though identification with a group may lead individuals to act in group-typical ways, this does not mean that individuals who identify with a group always act in accordance with the social identity based in that group membership. The influence of identification on individual behavior is contingent on social identity being

salient or cognitively activated by the context (van Knippenberg, 2000; van Dick et al., 2009a).

### 2.3.3 Social comparison

The process of comparing oneself to other people is a basic aspect of human experience, on that helps to reduce uncertainty and create meanings. In fact, social comparisons may be an “almost inevitable element of social interaction” (Festinger, 1954; Brown et al., 2007). The primary goal of social comparison is to acquire information about the self. It has been identified three specific motives for comparison: self-evaluation (how am I doing?), self-improvement (the desire to improve about their abilities) and self-enhancement (the desire to protect/enhance one’s attitude towards the self). Aside from the motives behind social comparison, the direction of comparison is another fundamental distinction. Originally Festinger (1954) proposed a unidirectional upward drive whereby the individual looks to superior others for inspiration and self-improvement. However, subsequent research on social comparisons has found this is not always the case. In particular people may opt to compare downward (with others who are worse off) to self-enhancement. Therefore, individuals engage in both upward and downward comparisons, which occur on a daily basis. Studies have shown that the two types of comparisons represent empirically separate constructs (Brown et al, 2007; Buunk & Gibbons, 2007; Gibbons & Buunk, 1999; Greenberg et al, 2007).

There are contradictory results about the effects of upward and downward comparison processes at team level. Some researchers point out those individuals who compare downward can feel better and thus social comparison has a positive effect on the individual behavior and attitude (Moore, 2007). Others suggest those individuals who compare upward can feel better because they are motivated to improve their work to be as their colleagues (Buunk et al., 2005; Greenberg et al, 2007). The difference between these results is explained by other important feature of social comparison: the contrast and assimilation effect (Brown et al., 2007; Greenberg et al., 2007). Contrast effects (“that person is not me”) suggest that upward comparisons are more likely to evoke negative effect. Comparing upwards puts one in contrast to someone better off. Assimilation effects (“that person could be me”) suggest that upward comparisons are

more likely to evoke positive effects (Buunk et al., 2005), because individual may engage in upward comparison to confirm that they are similar to the comparison target (Buunk et al., 2005). Therefore, there are four types of social comparison processes: upward assimilation and upward contrast, and downward assimilation and downward contrast. Differences are in the type of thoughts these comparisons produce on individual feelings about the self and the comparison target (Molleman et al., 2007). Moreover, contextual factors can moderate these relations. A competitive context is likely to facilitate contrast effects because the motive for comparison is to self-enhance, whereas a cooperative context may facilitate assimilation effects because the motive for social comparison is to self-improve (Brown et al., 2007; Spence et al., 2011).

## 2.4 RELATIONS BETWEEN VARIABLES

### 2.4.1 Management control systems and team performance

Team performance is frequently not reached because individuals in the group reduce their effort on the task. This team problem is named motivation losses (Blascovich, 2008; Karau & Williams, 1993; Lount & Phillips, 2007). Researchers point out that these motivation losses occur because the team is not really meaningful for team members. Motivation losses can be avoided if team members think as “us” rather than “I” (Gold & Sudgen, 2007; Kocher & Sutter, 2007; van Dick et al., 2009b). Management control systems can be used to increase individual motivation within organizations (Birnberg et al., 2007). In the last decade, due to the increased importance of team-based relations, management accounting researchers have analyzed the relation between MCS and group performance (see Birnberg, 2011). However, most of the studies have focused on the design of MCS instead of the use of MCS (Adler & Chen, 2011; Birnberg, 2011).

### *2.4.1.1 Management control systems design and team performance*

Related to the design of MCS, two mechanisms have been highlighted in the literature: group incentives and group performance reports. Libby and Thorne (2009) analyzed the relation between group and individual incentives and group performance in two types of group-task environments: a production environment (where individuals cannot communicate and cooperate) and a team environment (where individuals can help each other and cooperate). The results point out that group incentives increase team performance but only in team environments instead of production environments. Moreover, the authors find there is no relation between either type of incentives and group performance in production environments (Libby & Thorne, 2009). Therefore, these results stress two conclusions. First, traditional incentives, based on individual information, do not work in group-task environments. Secondly, in some group-task environments, group incentives are not enough to influence team performance. The reason is group incentives create social dilemma situations in group-based settings where communication and cooperation is not allowed (Coletti et al., 2005; Gold & Sudgen, 2007; Rowe, 2004, Rowe et al., 2008). In this situation, group incentives might be complemented with other type of control mechanisms, as performance reports, to really influence group performance (Bandiera et al., 2005; Román, 2009)

Coletti et al. (2005) analyze the relation between control mechanisms and group performance. The authors analyze two features of control mechanisms: a control and informational feature. The control feature describes a situation where an auditor could control the effort of team members. The informational feature describes a situation where performance feedback is used within teams. In the study by Coletti et al. (2005), individuals' performance information was share at team level (i.e. individuals have information related to effort and performance of other teammates). The results stress that this control mechanism reduces free-riding behaviors within teams –where communication is not allowed- and increases group performance. However, the design of the study does not allow differentiate the effects of the control and informational feature on group performance. Román (2009) complements the results of Coletti et al. (2005). By using a case study the author analyzes the relation between group incentives, group performance reports and group outcomes (absenteeism, quality, performance) in a large manufacturing firm. Their results stress that group incentives might be implemented in conjunction with other control mechanisms, as performance

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reports, to facilitate cooperation, and reinforce monitoring within teams. In this study, the performance reports was based only on aggregated group information, that is, there was no individual information sharing within the group. The results stress that the informational feature of group performance report allows that high-performers identify low-performers within the team and volunteer help them to improve (Román, 2009). Although Román (2009) does not specifically mention the social comparison process, the case describes how upward and downward comparison work within teams, when an aggregated performance report is used.

The studies described above highlight some limitations related to management accounting research and team work that can be overcome with further research. First, the importance of adapt the design of control mechanisms to group context, since traditional designs (i.e. individual incentives, vertical incentives or individual feedback) do not work. I posit these types of designs do not fit in group context since are focused on the external motivation of individuals, instead of the identified motivation (Gold & Sudgen, 2007). Following self-determination theory, I posit organizations should focus on identified motivation of individuals in team-based setting (Adler & Chen, 2011; Gagné & Deci, 2005). The reason is twofold. First, identified motivation is associated with affective states, as commitment, which supports pro-social behaviors such as helping others. Identified motivation may enable team members' coordination and promote supportive work climate. Secondly, identified motivation is positive related to controls. For example, a control mechanism (as feedback) can conflict with intrinsic motivation, as the individual feels someone is coercing him to do the task (instead of doing by his own satisfaction). However, control mechanisms (as feedback) can be seen as a means to reach the goals in a situation where the individual is identified motivated. The work of Román (2009) highlights how performance reports push cooperation within teams, because the information provided to team members allows them to help each other for achieving team goals (Adler & Chen, 2011; Gagné & Deci, 2005; Lau & Moser, 2008).

Secondly, the studies described above stress the importance of the design of performance reports to complement group incentives in collaborative environments, where social dilemma situation is present (Coletti et al., 2005; Rowe, 2004; Rowe et al., 2008). Their results highlight the importance of the informational feature because



enhances some processes that are not present in single-work environments, as social comparison. Román (2009) describes how an aggregated performance report works within teams. Its description highlights how upward and downward comparison processes was developed within teams. However, the case study does not allow analyzing cause-effect relations between performance reports, social comparison processes and group performance. Moreover, few studies have addressed the prevalence and implications of social comparisons at work despite the fact that formal mechanisms and procedures within organizations and teams can push these processes (i.e. with incentives, pay schemes or performance reports) (Buunk et al., 2005; Goodman & Haisley, 2007; Towry, 2003).

Finally, most of previous studies are based on additive models, between management control systems and group performance. However, these additive models cannot explain the process by which management control systems affects group performance. Intervening variable models allow test social psychology theories in more detail by explicitly representing and measuring at least some of the intervening variables (as individual motivation or social comparison) that leads from management accounting variables to their effects (Birnberg et al., 2007). In summary, I combine management accounting literature and social psychology literature to develop an intervening model related to the design of performance reports, social comparison, and group motivation and performance.

### *2.4.1.2 Management control systems use and team performance*

Management accounting researchers' focused on the style of use of MCS have mainly analyzed its effects on organizational outcomes (Adler & Chen, 2011; Tessier & Otley, 2012). For example, Naranjo-Gil & Hartmann (2006) analyze the relation between diagnostic and interactive use of MCS and strategy implementation, finding that both type of uses are positive associated with the organizational output. Henri (2006) finds that the interactive use is positive associated with organizational capabilities as market orientation, entrepreneurship, innovativeness and organizational learning, while diagnostic use is only positive associated with market orientation, innovativeness and organizational learning. Widener (2007) analyzes the indirect

effect of the style of uses of MCS on organizational performance, via organizational behavior responses as attention and learning. Nevertheless, although these studies were focus on organizational variables, they also described how the styles of uses worked at individual and group level within organizations. The interactive use of MCS has been highlighted in collaborative environments (see Henri, 2006; Simons, 1995, 2000; Widener, 2007; Kominis & Dudau, 2012).

Kominis & Dudau (2012) describe a case study of inter-organizational relationships in the public sector. The authors describe how the interactive use offers opportunity for meeting and involving debates between partners. Therefore, individuals from a specific organization feel closer to and in constant interaction with individuals of the other organization, working and feeling as a team. The authors highlight that the role of interactive system is to promote participation, involvement, dialogue and learning, by creating the atmosphere necessary to enable individuals to share their insights. Abernethy & Brownell (1999) highlight that the interactive use of budgets is consistent with the operation of cross-functional teams. The interactive use can be seen, itself, as an integrative liaison device that breaks down barriers between individuals that inhibit information flows. Interactive use requires more extensive involvement and interaction of organizational members, which facilitate commitment to organizational priorities. Therefore, previous studies of management accounting literature suggest positive effects of the interactive use on individual behavior in collaborative settings. However, there is no evidence of a cause-effect relation between the interactive use of MCS and the individual motivation and performance (Adler & Chen, 2011; Tessier & Otley, 2012). Some researchers suggest the problem has been the confusion in the literature related to the definition of the concepts of the style of use of MCS. Although the interactive use of MCS has been analyzed as one-dimensional, researchers suggest it is a multidimensional construct (Bisbe, Batista-Foguet & Chenhall, 2007; Tessier & Otley, 2012).

Interactive control system can be divided in two dimensions: the focus on strategy uncertainty and the intensity of use by organizational members. Given the distinct nature of the two dimensions, they do not necessarily share the same antecedents and consequences (Bisbe et al., 2007; Ferreira & Otley, 2009, Tessier & Otley, 2012). It is the dimension of the intensity of the interactive use which is related to high levels of

participation and involvement of organizational members. Abernethy & Brownell (1999) have suggested these processes of participation and involvement help employees to reach a compromise with their group goals.

The studies described above highlight some limitations in management accounting research related to the use of the interactive MCS, but also support new opportunities for future research. First, researchers should differentiate dimensions of the interactive use of MCS to separately analyze its antecedents, and also its effects. The analysis of the different dimensions may help researchers to understand the effects of the interactive use on individual and group behavior (Tessier & Otley, 2012). Secondly, the intensity dimension of the interactive use of MCS matches with social-determination theory suggestions: high levels of participation and involvement can increase identified motivation of individuals (Adler & Chen, 2011; Meyer & Herscovitch, 2001). Thirdly, including mediating variables, as individual motivation, can help researchers to understand the relation between management control systems and team effectiveness and outcomes (Birnberg et al., 2007; Mathieu et al., 2008). Therefore, combining management accounting literature and social psychology literature, I develop an intervening model where the identified motivation is the mediating variable between the interactive use of MCS and the group performance. This model helps to understand how the interactive use of MCS influences individuals' performance in team-based settings.

### 2.4.2 Social identity and team performance

Van Dick et al. (2009b) analyze the mechanisms that can avoid motivation losses within teams. The authors stress individuals would increase their productivity in groups under conditions that make the group an important component of their identity, that is, under conditions that influence intergroup or social identity. If the individual is personally aligned with the group, therefore, he would expend more effort in group tasks (Haslam, 2001). In spite of these suggestions, social identity researchers traditionally might focus on analyzing the influence of social identity on team members' behavior such as commitment, loyalty, cohesion or turnover (see Haslam, 2001, van Dick et al., 2009b) leaving aside the analysis of its effects on team

members' performance. Nevertheless, some studies have analyzed this direct relation but with different results. For example, van Dick et al. (2009a) do not find a direct relation between social identity and team performance. The authors suggest the task the group perform it is a task where individual motivation matter less. Towry (2003) finds that social identity does not influence team effort when a specific incentive system (a vertical system) is used.

I posit social identity influences individual behavior and performance in team-based settings only when two processes are activated on individual mind: categorization and depersonalization (Adler & Chen, 2011; Haslam, 2001; Haslam et al., 2006; Tajfel & Turner, 1986). First, categorization is related to the context where the individual is working and also on how the individual interprets this social context (Hogg and Terry, 2000; Rowe et al., 2008; van Knippenberg, 2000). That is, if the context reminds a group frame, therefore, social identity may influence individual behavior towards group goals. Secondly, depersonalization occurs when the individual identifies with the group so much that the individual thinks he could be interchangeable with other teammates (Tajfel, 1978). At this moment, team members feel attached and bonded. And this affective bond is related to individual motivation (Meyer & Herscovitch, 2001; Meyer et al, 2004). I posit in this dissertation social identity influences team members' behavior through this affective bond, that is, through team members' identified motivation (Adler & Chen, 2011; Haslam et al., 2006; Meyer & Herscovitch, 2001; van Knippenberg, 2000).

### 2.4.3 Management control systems and social identity

Management accounting researchers have found confusing results related to the relationship between social identity and management control systems (Birnberg et al., 2007; Towry, 2003; Rowe, 2004). For example, Towry (2003) analyzes two types of incentives at group level: vertical and horizontal. The vertical system is supported by agency theory, and its main feature is that each teammate controls the other but report to the principal or manager. Contrary, the horizontal system does not involve to reporting the principal, but to the teammate. The author analyzes how these two types of incentives work in groups with high and low team identity. The results stress a

moderating effect of the incentive system on the direct effect of team identity on effort. Under the horizontal control system (which relies on mutual monitoring and cooperation) a strong team identity leads to high levels of group performance, whereas under a vertical control system, there is no effect of team identity on group performance. Therefore, the author only finds a direct relation between team identity and group performance under the horizontal incentive system. Rowe (2004) analyzes how accounting reports influence individual performance within cross-functional teams and posit that team identification is one mediator variable. The author finds team identification influences individual performance, but the results do not support the mediating relation between accounting reports, team identity and individual performance. Therefore, one study stresses control systems act as a moderator variable between social identity and group performance (Towry, 2003; van Dick et al., 2009b), while the other study stresses a direct effect of controls systems on social identity (Rowe, 2004).

The studies described above point out mixed results related to management control systems and social identity relation (Birnberg et al., 2007). However, combining management accounting literature and social identity literature, some explanation can be found. The context can remind a specific social category of the individual (i.e. activated the salience of religious category). If the social category is salient (i.e. religious category), thus, the individual acts as a member of this category, following social (i.e. religious) norms (van Knippenberg, 2000). Therefore, context moderates the influence of individuals' social identity on their behavior, and accounting and control systems are part of organizational context (Towry, 2003; van Knippenberg, 2000; van Dick et al., 2009b). In this dissertation I combine social identity and social-determination theories, and I analyze the relationship between management control systems and social identity to influence team performance.

## 2.5 CONCLUSIONS

This chapter has described the main theories and variables used in this dissertation and also its relations. It can be concluded that management control systems in team-based settings should be focus on individual identified motivation (Adler & Chen, 2011;

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Gagné & Deci, 2005). The literature surveyed does suggest two ways: the interactive use of MCS and the group performance reports. On one hand, related to the interactive use of MCS, it has often been suggested that participation and involvement of organizational members have positive effects on individual behavior in group-based settings. However, there is no empirical evidence of this relation (Tessier & Otley, 2012). I develop two models related to the use of MCS. Chapter 3 analyzes the direct relation between the interactive use of MCS and the individual motivation in team-based environments. Chapter 4 analyzes a mediating model between the interactive use of MCS and group performance, where the identified motivation is the mediating variable. Furthermore, I introduce social identity in the models tested in chapter 3 and 4, because I posit identified motivation is also enhanced by social identity. Moreover, researchers suggest that social identity and management control systems interacts in team-based environments.

On the other hand, related to the design of group performance reports, management accounting literature has highlighted the positive effects of its control feature at team level (see Coletti et al., 2005; Towry, 2003; Román, 2009). However, related to the informational feature, management accounting literature suggests different types of designs can positive influence team members' behavior and performance (either aggregated either with individual performance information sharing on the group). Some authors suggest the design of performance report may push a group context (Rowe, 2004; Rowe et al., 2008), while other authors suggest the design may enhance social comparison process within the team to increase individuals' performance (Coletti et al., 2005; Towry, 2003). Furthermore, social identity can also moderate these results as influences how individuals interpret group information (O'Fallon & Butterfield, 2012). I develop a mediating model in Chapter 5 where social comparison process is the intervening variable between management control systems, social identity and group performance.

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## CHAPTER 3: STUDY I

# The use of Management Control Systems, Social Identity and Team Commitment

### 3.1. Introduction

### 3.2. Hypotheses development

### 3.3. Experiment design

### 3.4. Results

### 3.5. Discussion and Conclusions

### Appendix

### References

## 3.1 INTRODUCTION

Today's organizations face complex and dynamic environments. One important organizational development is the creation of inter- and intra- departmental teams to be more efficient and to enhance flexibility and innovativeness (Berry et al., 2009; Chenhall, 2008; Mathieu et al., 2008). However, the adoption of team-based structures does not automatically lead to performance improvement (Libby & Thorne, 2009; Lount & Phillips, 2007; Salas, Goodwin & Shawn, 2009). Researchers highlight successful teams require the commitment of team members with group projects and goals (Haslam et al., 2006; Katzenbach & Smith, 1993; Lau & Moser, 2008; Lount & Phillips, 2007). Given the importance of commitment, researchers have analyzed their antecedents (see Cater & Zabkar, 2009; Haslam et al., 2006; Meyer & Herscovitch,

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2001). Management accounting researchers have point out accounting and control practices can increase individuals' commitment (see Herda & Lavelle, 2011; Ketchand & Strawser, 2001; Lau & Moser, 2008). However, most of these studies have focused on organizational or professional commitment, while employees of team-based organizations are members of at least two entities or foci, the organization and the team. Nevertheless, the antecedents and outcomes of each type of commitment (to the organization or to the team) work in different way (Bishop et al., 2005; Vandenberghe, Bentein & Stinglhamber, 2004).

This study is focused on the antecedents of team commitment. If organizations need to increase team members' commitment, they may use practices specifically linked to the group interpersonal dynamics (Meyer & Herscovitch, 2001; Vandenberghe et al., 2004). This study follows the general model of workplace commitment of Meyer and Herscovitch (2001, p.316) to analyze what accounting and control practices can be used at team level to develop team members' commitment. This model suggests any mechanisms that increase the involvement of an individual in a course of action will contribute to the development of commitment (Meyer & Herscovitch, 2001, p. 316). Recent management accounting researchers have drawn on concepts such as the interactive use of management control systems (Simons, 1995, 2000) to highlight its features related to individual involvement in collaborative environments (Adler & Chen, 2011; Kominis & Dudau, 2012).

Management control systems (MCS) are defined as formalized procedures and systems that use information to maintain or alter patterns in an organizational activity (Henri, 2006). An important feature of these MCS is how and for what they are used (Simons, 1995, 2000; Tessier & Otley, 2012). Simons (1995)'s levers of control framework distinguishes two styles of use: diagnostic and interactive. The diagnostic use represents the traditional feedback role of MCS, where control information is only used to monitor and reward pre-established goals. The interactive use represents a positive force, and control information is used not only to monitor and reward, but also to involve organizational members in decision activities (Henri, 2006; Widener, 2007). It seems that an interactive use, which pushes the participation and involvement of organizational members, can produce positive effects on individual motivation and behavior (Adler & Chen, 2011; Bisbe, Batista-Foguet & Chenhall, 2007; Tessier &

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Otley, 2012). However, despite the growing body of accounting literature related to Simons (1995) framework, the question of how different uses of MCS can influence individual behavior is yet unanswered (see Adler & Chen, 2011; Tessier & Otley, 2012). The reason is interactive use has been traditionally analyzed as one-dimensional concept; nevertheless, recent researchers suggest that it is a multidimensional concept (see Bisbe et al., 2007; Tessier & Otley, 2012). If researchers differentiate dimensions of the interactive use, it can distinguish antecedents and outcomes of each dimension, and understand how these dimensions influence individual behavior (see Bisbe et al., 2007, p.809). Following the general model of workplace commitment of Meyer and Herscovitch (2001), this study I proposes that one dimension of the interactive use, related to the intensity of its use between individuals, increases team members' commitment to group goals and projects.

Meyer and Herscovitch (2001, p.316) highlight other mechanisms to increase commitment to a specific target: a situation that contributes to the likelihood that an individual will derive his or her identification with an entity or group. This suggestion is in line with social psychology researchers who point out social identity of team members' influences individuals' motivation through group goals (Ellemers, de Gilder & Haslam, 2004; Haslam et al., 2006; van Dick et al., 2009). Social Identity Theory assumes that people classify themselves and others according to various social groups (e.g. nationality or religion) and also in terms of group membership (Haslam, 2001; Tajfel & Turner, 1986). If individuals define themselves in terms of their group membership, thus, they are motivated to achieve team goals, that is, they are committed with team goals and values (Ellemers et al., 2004; Haslam et al., 2006; van Knippenberg, 2000). Therefore, social identity researchers point to the importance of the identification process to develop commitment (Ellemers et al., 2004; Haslam et al., 2006), while organizational behaviour researchers point to the importance of the involvement process instead of the identification process (Meyer & Herscovitch, 2001; Wegge et al., 2006). Although Meyer and Herscovitch (2001) suggest the effect of the involvement process should be higher than the identification process on the development of commitment, nevertheless, there is no empirical evidence comparing the strength of these two processes.

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This study has two goals. First, it is focused on the direct effect of the interactive control system on team members' commitment. Secondly, it compares the effects of social identity and the interactive use of MCS on the development of team members' commitment. Although, traditionally accounting researchers have analyzed the expected relation between accounting practices and commitment with survey studies, recent accounting researchers suggest using experiments to analyze individual behavior in team-based settings (see Libby & Thorne, 2009; Coletti, Sedatole & Towry, 2005). Experiments allow analyzing cause-effect relations between accounting practices and individual and group behavior (Sprinkle, 2003; Birnberg, 2011). The two objectives of this study were tested with an experiment conducted in Pablo Olavide University with 120 students. The independent variables are the interactive use of MCS (as a proxy of participation and involvement processes) and the social identity of the team (as a proxy of identification process). The results of the experiment support the hypotheses of the study. First, the interactive use of MCS increases team members' commitment. Secondly, the effect of the interactive use is higher than the effect of social identity on the team members' commitment.

This study contributes to the literature in three ways. First, it introduces the concept of team commitment in accounting literature, due to the increased number of teamwork studies. Traditionally organizations were based in hierarchical and vertical structures, with individuals working in single work conditions (Berry et al., 2009). In this situation, organizations were interested on increasing individuals' commitment to these foci, that is, to the organization (see Ketchand & Strawser, 2001). However, team-based work is a main structure of today's organizations, and social psychology researchers suggest that employees should be committed to these nearest foci instead of the organization to really be more efficient (Haslam et al., 2006; Vandenberghe et al., 2004). Secondly, it analyzes one dimension of the interactive use of MCS and its effects on individual behavior. Following recent calls of management accounting researchers (see Adler & Chen, 2011; Tessier & Otley, 2012), this study provides empirical evidence on the relation between the interactive use of MCS and individual behavior in team-based settings. This study follows one proposition of Adler & Chen (2011) and, using an experiment, demonstrates a direct relation between the intensity of use of MCS within teams and the development of affective commitment, that is, the development of self-determined behavior of team members (Meyer, Becker &

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Vandenberghe, 2004). Finally, this study provides empirical evidence of the strength of two processes identified in the general model of workplace commitment of Meyer and Herscovitch (2001). Although psychology researchers stress the positive effects of social identity on team members' motivation and commitment (see Haslam, 2001; Haslam et al., 2006; van Dick et al., 2009), the results of this study suggest organizations can push the development of individuals' commitment only changing the style of use of control information within teams.

The remainder of this chapter is organized as follows. Section 3.2 describes the hypotheses and the theoretical model. Section 3.3 describes the design of the experiment. Section 3.4 contains the results of the experiment. Finally, this chapter is concluded with section 3.5 which contains a discussion of the findings.

### 3.2 HYPOTHESES DEVELOPMENT

Commitment is a force that binds an individual to a course of action that is of relevance to a specific target (Den Hartog & Belschak, 2007; Meyer & Herscovitch, 2001). It has been identified three types of commitment: affective, normative and continuance. Differences are in the types of mind-set (e.g. emotional attachment, sense of being locked in, belief in and acceptance of goals) (Meyer & Herscovitch, 2001). Affective commitment reflects an affective bond and emotional involvement with a target. Continuance commitment is accompanied by a cost-avoidance mind-set (that is the individual is committed to a course of action because of the perceived cost of failing to do so). And normative commitment reflects a perceived obligation to pursue a course of action (Meyer & Herscovitch, 2001; Meyer et al., 2004). This study is focused on the affective commitment, because is the one which has strong links to individual behavior (Meyer et al., 2004; Lau & Moser, 2008). The reason is affective commitment is a component of autonomous individual motivation (Meyer et al., 2004). This affective commitment is seen as a self-determined behavior of the individual, instead of a controlled behavior (Adler & Chen, 2011; Meyer et al., 2004). Researchers point out that people who feel affectively committed requires less control and supervision (Buchanan, 1975; Ouchi, 1979).

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Affective commitment is related to a wide range of individual behaviors such as intention to quit the organization, loyalty, personal initiative or proactive behavior in job environments (Cater & Zabkar, 2009; Meyer & Herscovitch, 2001; Meyer et al., 2004; Spence et al., 2011). However, the direct effect of affective commitment on job performance is not clear. Yet some researchers suggest there is a positive and direct effect on job performance (Meyer & Allen, 1991; Nouri & Parker, 1998; O' Connor, 2006), while others suggest there is not direct effect (Den Hartog & Belschak, 2007; Vandenberghe et al., 2004). The reason may be explained by other dimension of commitment: the focus. An individual who works in an organization could be committed to different focus, as organization, supervisor or workgroup (Den Hartog & Belschak, 2007; Meyer & Herscovitch, 2001). It has been argued that focused and nearest commitment, as commitment to the team, might be better predictors of job performance than broad measures of commitment, as organizational commitment (De Gilder, 2003; Vandenberghe et al., 2004). Therefore, in contemporary organizations, focus in team-based work, it is particularly relevant analyzing how affective commitment to the work group can be developed (Bishop et al., 2005; Meyer et al., 2004).

#### 3.2.1 The interactive control system and team members' commitment

I follow the general model of workplace commitment of Meyer and Herscovitch (2001, p. 315) to understand how affective commitment can be developed. Meyer and Herscovitch (2001) point out that any mechanism or situational variable that contributed to the likelihood that an individual will become involved (absorbed) in a course of action will contribute to the development of affective commitment. I follow management accounting literature to identify control practices that have been positively related to affective commitment (see Hall et al., 2005; Ketchand & Strawser, 2001; Lau & Moser, 2008; Nouri & Parker, 1998; de Ruyter & Wetzels, 1999). These studies analyze design features of management control systems, as budget participation or non-financial performance measures (Lau & Moser, 2008; Nouri & Parker, 1998). Moreover, they are focused on organizational and/or professional affective commitment instead of team commitment. However, the results

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suggest accounting and control practices may produce positive emotions on employees to develop commitment (Nouri & Parker, 1998; Lau & Moser, 2008).

Tessier and Otley (2012) have recently suggested a different style of use of control information can produce positive emotions on employees. The authors stress researchers may differentiate managerial intentions and employee perceptions of controls (see Adler & Chen, 2011; Tessier & Otley, 2012, p. 5). Despite of managers traditionally use MCS for controlling individual behaviors, if the style of use allows individuals' involvement and participation in a course of action, individuals may feel they are important for achieving the objectives of this course of action, that is, individuals may feel motivated (Bishop et al., 2005; Spence et al., 2011; Tessier & Otley, 2012). Recent management accounting researchers point to the importance of the style of use instead of the design of management control systems to influence individual behavior (see Adler & Chen, 2011; Ferreira & Otley, 2009; Tessier & Otley, 2012). For example, Adler & Chen (2011) propose the interactive style of use of MCS is positively related to individual motivation. The authors suggest this interactive use is related to an autonomous motivation of individuals, and affective commitment is a component of this autonomous motivation (Meyer et al., 2004, p.996). However, there is no empirical evidence of the relation between the interactive control system and individual motivation (Adler & Chen, 2011).

“Interactive control systems are formal information systems managers use to involve themselves regularly and personally in the decision activities of subordinates” (Simons, 2000, p. 95). This interactive use is opposite to a diagnostic use, which it is used by managers to monitor organizational outcomes and correct deviations from preset standards of performance (Simons, 2000, p. 59). Interactive use of MCS has been described as a positive force, as MCS are used to expand opportunity-seeking and learning throughout the organization (Henri, 2006). One of the main features of interactive use is the continuous interaction and involvement of organizational members, across levels and functions, related to control information (Bisbe et al., 2007; Henri, 2006; Kominis & Dudau, 2012; Naranjo-Gil & Hartmann, 2006, 2007).

Simons (1995, p. 86) describes organizational situations where the interactive control system is needed. He posit that when organizations are small, key managers and



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employees can sit down around the same table and informally debate and discuss control information. However, when managers have less personal contact with employees, the organization needs formal systems to share emerging information between organizational members. The author highlighted that the interactive use is a formal system that allows regular contact and involvement of employees. However, the direct effect of this interactive use on employees' behavior is yet unclear (Adler & Chen, 2011). Some researchers posit that the interactive use enhances cooperation between individuals; others that allows coordination in inter-functional teams; other that allows employees to commit to organizational goals, or that increases motivation (see Abernethy & Brownell, 1999; Henri, 2006; Naranjo-Gil & Hartmann, 2006; Widener, 2007). The reason for this variety of effects suggested in the literature has been recently explained. The interactive use of MCS is a multidimensional concept. Therefore, if researchers identify different dimensions, they can analyze its different antecedents and its different effects (see Bisbe et al., 2007, p.809). Nevertheless, so far researchers have suggested different effects of this interactive use, but without any empirical studies (see Tessier & Otley).

The present study is focused only on one dimension of the interactive control system: the intensity of use by organizational members, also within organizational levels and across functions, that is, also in tem-based settings (see Henri, 2006; Naranjo-Gil & Hartmann, 2007; Kominis & Dudau, 2012). Although there is no empirical evidence of the relation between this interactive use and individuals commitment, management accounting researchers have described some of the positive effects of the interactive use at individual and group level: it is a powerful solidarity mechanism, it promotes stability and commitment between employees, it enhances a psychological bond among organizational members, or it induces a group frame (see Adler & Chen, 2011; Henri, 2006; Kominis & Dudau, 2012; Mundy, 2010). These descriptions help to understand the process by which the intensity of the interactive use of MCS influences team members' commitment, that is, team members' autonomous motivation (Adler & Chen, 2011; Henri, 2006; Mundy, 2010).

Interactive use of MCS facilitates formal processes of participation and involvement between team members. The intensity of use means an intensive and regular involvement of team members in the use of control information. This intensity is

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related to time-consuming (Henri, 2006; Mundy, 2010). If team members spend more time together discussing and debating control information related to group projects, therefore, they feel closer. This closer relationship can foster understanding between team members (Latané, 1981; Chidambaran & Tung, 2005). Therefore, an intense involvement of team members acts as integrative liaison device individuals, reducing distance, not only physical, but also psychological (Adler & Chen, 2011; Henri, 2006). If distance is reduced, an affective state may be enhanced among team members (Cater & Zabkar, 2009; Latané, 1981). This affective state is related to affective commitment, as individual feels he is attached to the group and its goals (Meyer et al., 2004). Following this reasoning, I posit some management accounting researchers have just suggested the positive effects of the interactive use on individual commitment. For example, Abernethy and Brownell (1999, p.192) point out interactive use of budgets help employees reach a compromise. Mundy (2010) suggest interactive use promote employee commitment. Following this reasoning, I formulate the first hypothesis of this study:

Hypothesis 1: The interactive use of MCS increases the affective commitment of team members.

#### **3.2.2 The interactive control system, social identity and team members' commitment**

Meyer and Herscovitch (2001) model suggests an individual who derive his or her identity from association with an entity or group; he will develop commitment to this entity or group. Association with an entity or group is related to identification to this entity or group, that is, is related to social identity (Adler & Chen, 2011; Ellemers et al., 2004). Social identity is an individual feature which describes a psychological process that occurs when a person self-identifies as a social member (Tajfel & Turner, 1986; Haslam, 2001). Although individuals have different social identities (i.e. as an organizational member, family member, or group work member), their behavior are guided by the identity is salient in a given moment (van Knippenberg, 2000). Therefore, if an individual identifies with his group work, thus, the group becomes

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part of the individual, and the individual is motivated by group goals instead of his/her individual goals (van Knippenberg, 2000; van Dick et al., 2009).

Social psychology researchers have extensively focused on social identity as a motivational factor (see Haslam, 2001; van Knippenberg, 2000; van Dick et al., 2009). However, few studies link this motivational state, pushed by social identity, with commitment, but an exception is Haslam et al. (2006). The authors demonstrate social identity helps to develop commitment to group projects. However, the results of Haslam et al. (2006) suggest other processes, in addition to social identity, influence team members' commitment. The study of Haslam et al. (2006) analyzes the relation between social identity and commitment on group projects, even when problems arise to these projects. The authors indicated in their discussion commitment to group projects is not an automatic response to social identity. Moreover, during the task of Haslam et al. (2006) study, groups were allowed to discuss control information related to the evolution of the group project (as budgets or cost information). The authors point out that it was only over the time that social identity was observed to have an effect on team members' commitment. That is, the more time team members spent participating and discussing control information, the more team members felt committed to the group project, even the negative control information. However, the authors did not control the process of involvement and participation and its effects on individuals' commitment, because the study was only focused on the process of identification with the group.

The results of Haslam et al. (2006) suggest that if both processes are presented, social identity and involvement, team commitment is higher than if only one process is present. However, Haslam et al. (2006) stress the importance of the identification process (social identity) instead of the involvement process. Contrary Meyer and Herscovitch (2001) stress the importance of the involvement process. The general model of workplace commitment suggests affective commitment is characterized by two features: a cognitive component and a positive emotion (Meyer & Herscovitch, 2001, p.308). The authors highlight that the cognitive component (that is, recognition that there is an important purpose on what the individual is doing) is needed to develop affective commitment. Nevertheless, this cognitive component might be accompanied by a strong positive emotion to influence individual behavior.

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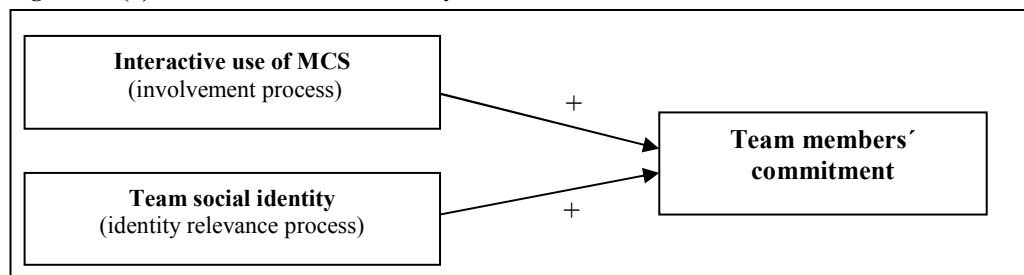
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The present study suggests the process of involvement has strong effects on team members' commitment, than the process of identification, because the last one is related to a cognitive component, while the first one is related to an affective bond between individuals (Wegge et al., 2006). Social identity has been defined as a cognitive process, that is, the individual analyzes his context, interprets this context, and thus, adapts his behavior to the context (Haslam, 2001; Tajfel & Turner, 1986). Contrary, involvement is related to affective-based behavior (Wegge et al., 2006; Weis & Corpanzano, 1996). The difference between the cognitive route (through social identity) and the affective route (through involvement and participation processes) does not imply that either no affective or no cognitive processes are involved respectively. But the relative weight and importance of the affective route should have a greater impact on team members' commitment (Wegge et al., 2006). Following this reasoning, I posit that the interactive use of MCS (as a proxy of an involvement process) is nearest the affective route, while the social identity of the team (as a proxy of an identity relevance process) is nearest the cognitive route. Following this reasoning, I develop the second hypothesis of the study:

Hypothesis 2: The effect of the interactive control system on team members' commitment is higher than the effect of the social identity of team members.

The model of the present study is represented in Figure 3.1. I present the interactive use as a proxy of an involvement process and social identity as a proxy of identification process, following the general model of workplace commitment of Meyer and Herscovitch (2001).

**Figure 3.1.(2): The research model of study I**



Source: own elaboration

### 3.3 EXPERIMENT DESIGN

This study analyzes the causal link between the interactive control system, social identity and team members' commitment. Although management accounting researchers have analyzed the relation between accounting practices and commitment with survey studies, I contrast the hypotheses with an experiment for two reasons. First, management accounting researchers are introducing experiments in team-based studies. The reason is that experiments are useful mechanisms for studying cause-effect relations between accounting practices and individuals' behavior within teams (see Coletti et al., 2005; Libby & Thorne, 2009; Rowe, 2004; Towry, 2003). Furthermore, social psychology researchers use experiments to analyze causal link between psychology variables, such as social identity, with individual behavior within teams (see Haslam et al., 2006; van Dick et al., 2009).

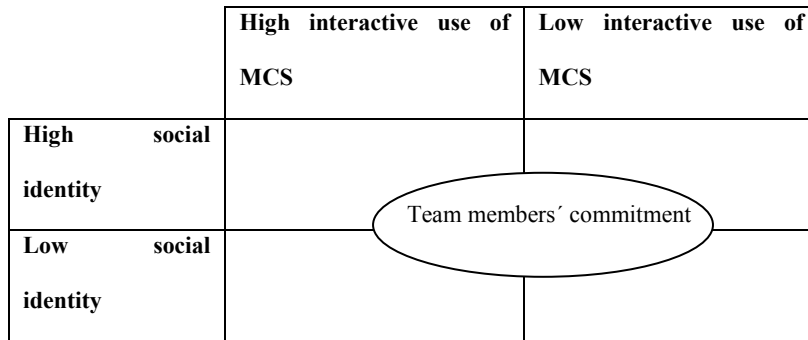
#### 3.3.1 Design and overview

This experiment uses a 2 x 2 (Interactive Use x Social identity) between-subjects factorial design (see figure 3.2.). The design of the experiment is modeled closely following the work by Haslam et al (2006), which examined the link between social identity and commitment to group projects. These authors designed a 2x1 experiment (social identity was the independent variable), where groups of three or four students were required to reflect upon plans for a Childcare Center being built in a down town. The work of Haslam et al (2006) is appropriated to contrast the hypotheses of this study for two reasons. First, authors manipulated social identity of teams, one of the independent variables of the present study. Secondly, groups in Haslam et al. (2006) study were allowed to discuss and debate information about the project, during 10 minutes, before deciding their level of commitment. This interaction process between team members were repeated three times, because team members received in three different phases control information related to the group project. Therefore, this design allows to manipulate the other independent variable of the study, the interactive use of MCS, manipulating the intensity, that is, the time that team members spend discussing and debating the control information (Bisbe et al., 2007; Henri, 2006).

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Figure 3.2. (3): Design of the experiment of study I.



Source: own elaboration

The experiment was programmed and conducted using the z-Tree software (Fischbacher, 2007) in a laboratory. When participants arrived, they were randomly assigned to teams of three individuals. Experimenter explained participants they were participating in a group decision-task. Groups had to select the level of investment in the construction of a Childcare Center in Seville city. The study had three temporal phases. At each phase groups were presented with control information (e.g. budgets, costs) about the progress of the project, and team members could debate and discuss this control information. The main control information used was the budget of the project, as represents one of the main important control practices to increase individuals' commitment (see Abernethy & Brownell, 1999; Naranjo-Gil & Hartmann, 2007). At each phase, groups were given more negative information than the previous phase (e.g. a budget report with a 10% increase in total costs; it had appeared a contaminant material in the children's sandpit). Nevertheless, none of these problems were fatal for the project's viability, but their existence made it clear that the project was in difficulty. After each phase, each participant responded individually the level of investment to be made by his group in the project on a scale marked in 60.000 € increments (maximum: 300.000 €)<sup>2</sup>. Therefore, participants had to decide three times. The task was representative of a number of significant organizational tasks in which managers and/or steering committees or cross-functional teams have a "watching brief" over a particular activity (and have the power to make decisions to provide or withdraw support) but cannot directly intervene to change the structure of events themselves (Haslam et al., 2006). Moreover, the task was highly involving for participants, allowing the manipulation of the interactive use of MCS.

<sup>2</sup>Participants respond individually because I analyze a motivation problem, not a group decision task (Haslam et al., 2006).

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#### 3.3.2 Manipulation and measures

There are three variables in this experiment: two independent variables (interactive use of MCS and social identity) and one dependent variable (team members' affective commitment).

The interactive use of MCS was manipulating through one of its dimensions: the intensity of use at team level. Intensity means more interaction between team members. Intensity tends to be time-consuming (Henri, 2006; Mundy, 2010). As the task allows team members to discuss and debate together control information about the project, I manipulated the intensity of use controlling the time team members used to this debate. In high interactive use condition, team members were allowed to discuss and debate control information for 10 minutes, in each phase. In low interactive use condition, team members were allowed for only 1 ½ minutes, in each phase. The experimenter controlled the discussion so that the debate only focused on the project control information and not personal issues, and also controlled that the communication was within and not between teams. As this study is the first one to my knowledge where the interactive use is manipulated in an experiment, I introduce a questionnaire to measure the level of interactive use within teams, only to support the results of the manipulating variable (see Appendix 3.1). This questionnaire has been used in several previous survey studies related to the interactive use of MCS (see Naranjo-Gil & Hartmann, 2006, 2007).

The independent variable of social identity was manipulating through the salience of this identity (see van Dick et al., 2009). Social identity researchers point out that salience, that is, the relevance of a social category for the individual in a given moment, influences the level of social identity of team members (van Knippenberg, 2000). I combined two procedures that have been used in previous works, color T-shirts and group name. First, the use of color increases the salience of groups (Haslam, 2001; Towry, 2003). The presence of two color groups promoted self-categorization, because the context reminds difference between in-group and out-groups. Secondly, meaning of the in-group could be increased by reinforcing the group identity or the individual identity with symbols and messages (Haslam et al., 2006). In high social identity condition, team members wore the same color T-shirt and were asked to generate a codename for their group. Contrary, in the low social identity condition,

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team members wore their own clothes and should fill their individual name in each of their responses<sup>3</sup>. I follow Haslam et al. (2006) to measure the level of social identification (Rowe, 2004). This questionnaire was answered at individual level at the end of the group decision task (see Appendix 3.2).

The dependent variable, team affective commitment, was measured following accounting and psychology researchers (see Coletti et al., 2005; Haslam et al., 2006). I measured two types of commitment: economic and attitudinal. Economic commitment was measured by using the level of investment that teams chose for the group project. If an individual feel commit to a project, therefore, the individual is going to maintain his/her initial strategy, despite the problems that may arise with the project (García-Jurado et al., 2000; Nesse, 2001). That is, individuals who are committed are those who maintain the level of investment on the project, despite the problems and the negative control information (see Haslam et al., 2006). I create a dichotomy variable, in phase II and phase III. If the level of investment is maintaining (or increasing) by team members, between phase II and I, thus, economic commitment takes the value “1”. Contrary, if the level of investment decreases between phase II and I, thus, economic commitment takes the value “0”. The same values are used between phase III and II. The attitudinal commitment was measured with a questionnaire at the end of the group decision task, following Haslam et al. (2006)<sup>4</sup> (see Appendix 3.3). Upon completion of the group decision task, a questionnaire was answered to assess manipulation checks and some demographic information (see Appendix 3.4).

In this experiment participated 120 postgraduate students from Pablo de Olavide University at Seville in November 2010 (no specific knowledge or skills were required to participate). I follow management accounting and social psychology researchers who also use students in their experimental studies (see Haslam et al., 2006; Coletti et al., 2005; Towry, 2003). These studies analyse the effects of contextual factors and individual features on individual behaviour (Birnberg, 2011; Sprinkle, 2003). None of the variables included in the present study is related to tenure or work experience of

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<sup>3</sup>Efforts were made to avoid other types of social identification between group members (e.g. friendships can contribute to members' group identification, Van Dick et al., 2009). The experimenter made sure that individuals of the same field were assigned to different teams, and further, members of a team not known in advance.

<sup>4</sup> Commitment is a multidimensional construct (see Meyer & Herscovitch, 2002). This study analyzes the affective dimension, which means, the attitudinal attachment of team members to team project. Normative and continuance commitment are not measured.



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team members (those variables would prevent using the select sample). It was formed 10 teams of 3 students for each condition (there was four conditions). The mean age of the participants was 27,75 years. The 43,33% were male, and the 56,67% were female. An incentive of 5 euros was used as a show up fee<sup>5</sup>. Further, a completely random lottery of 200 euros was drawn among all the participants. Participation in the experiment took about 45 minutes on average.

The support material used in the experiment is shown in a specific Appendix, at the end of the dissertation<sup>6</sup>. Two types of documents are presented: the documents given to students related to the evolution of the project, in phase I, II and III; and also the screens of Z-tree software that students saw while participating on the experiment.

## 3.4 RESULTS

Table 3.1 presents the descriptive statistics of the three measures of the dependent variable, affective commitment: economic commitment phase II, economic commitment phase III and attitudinal commitment<sup>7</sup>. Economic commitment phase II and phase III are dummy variables (if commitment is maintaining or increasing, economic commitment takes value “1”; if commitment decreases, economic commitment takes value “0”). Table 3.2 presents frequency of economic commitment phase II and III. This study analyzes individual behavior within teams; therefore, the results are presented at individual level (Haslam et al., 2006; van Dick et al., 2009). Manipulation check questions were satisfactory<sup>8</sup>.

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<sup>5</sup> I wanted to avoid participants could be motivated by external controls. Recent accounting researchers stress that individual and fixed incentives do not influence individual behaviour at group level (see Libby & Thorne, 2009; Román, 2009).

<sup>6</sup> See Appendix: Support material for experimental studies.

<sup>7</sup> A factorial analysis was made for the variable attitudinal commitment and Cronbach Alpha for the four items is 0,775.

<sup>8</sup> Manipulation was checked with Kruskal-Wallis test across four conditions, because data does not represent a normal distribution (Kolmogorov-Smirnov test;  $p < 0,05$ ).

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**Table 3.1.(2): Descriptive statistics at individual level (4 conditions; N: 120)**

	High interactive use of MCS (N: 60)			Low interactive use of MCS (N: 60)		
	Mean	S.E.		Mean	S.E.	
<b>High social identity (N: 60)</b>	Commitment phase II	0,87	0,346	Commitment phase II	0,90	0,305
	Commitment phase III	0,67	0,479	Commitment phase II	0,53	0,507
	Attitudinal commitment	3,75	0,818	Attitudinal commitment	3,45	1,06
<b>Low social identity (N: 60)</b>	Commitment phase II	0,87	0,346	Commitment phase II	0,83	0,379
	Commitment phase III	0,73	0,450	Commitment phase II	0,47	0,507
	Attitudinal commitment	3,93	0,765	Attitudinal commitment	3,52	0,79

Source: own elaboration

**Table 3.2.(3): Frequency - Dummy variables (4 conditions; N: 120)**

	High interactive use of MCS (N: 60)			Low interactive use of MCS (N: 60)		
	Value=0	Value=1		Value=0	Value=1	
<b>High social identity (N: 60)</b>	Commitment phase II	4	26	Commitment phase II	3	27
	Commitment phase III	10	20	Commitment phase III	14	16
<b>Low social identity (N: 60)</b>	Commitment phase II	4	26	Commitment phase II	5	25
	Commitment phase III	8	22	Commitment phase III	16	14

Source: own elaboration

The dependent variable is measured with two types of variables: dummy (economic commitment phase II and phase II) and continuous variables (attitudinal commitment). For this reason, I analyze the first hypothesis with two type analyses: a probit model for the dummy variables, and an analysis of mean difference between conditions for the continuous variable (Coletti et al., 2005; Ordaz, Guerrero & Murillo, 2005).Table

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3.3 presents the descriptive statistics of the three measures of the dependent variable, affective commitment, but only for the two interactive use conditions (high vs. low).

**Table 3.3.(4): Descriptive statistics at individual level (2 conditions; N: 120)**

High interactive use of MCS (N: 60)			Low interactive use of MCS (N: 60)		
Mean		S.E.	Mean		S.E.
Commitment phase II	0,87	0,343	Commitment phase II	0,87	0,343
Commitment phase III	0,70	0,462	Commitment phase III	0,50	0,504
Attitudinal commitment	3,85	0,791	Attitudinal commitment	3,49	0,93

Source: own elaboration

Probit models estimate the probability that  $y=1$  (economic commitment) as a function of the independent variable, that is, as a function of the interactive use of MCS. I estimate the model for the two dummy variables, economic commitment phase II and phase III. The model is not significant for economic commitment phase II ( $p>0,1$ ). However, the model is significant for economic commitment phase III (results in Table 3.4).

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**Table 3.4.(5): Probit model. Dependent variable: economic commitment phase III (N:120)**

**Independent variable: Interactive use of MCS**

Variable	Coefficient	Std. Error	t-Statistic	P-value
Constant	-0,524	0,366	-1,434	0,152
Interactive use of MCS	0,524	0,235	2,233	0,026
R <sup>2</sup> McFadden	0,031	Mean dependent variable		0,600
Akaike info criterion	1,337	S.D. dependent variable		0,483
Schwarz criterion	1,383	Loglikelihood		-78,24
Hannan-Quinn criterion	1,356	Restr. log likelihood		-80,76
LR statistic	5,041			
P-value(LR stat.)	0,024			
Observations with value =0	48	Total observations:		120
Observations with value=1	72			
Goodness of fit Hosmer-Lemeshow test				
Hosmer-Lemeshow (H-L) criterion	11,333			
Degrees of freedom	8			
P-value (Chi-squared)	0,1835			

Source: own elaboration

Table 3.4 presents the significance of the model (p-value LR statistic <0,05), the significance of the independent variable, the interactive use of MCS (t=0,524; p=0,026) and the acceptance of the null hypothesis (Hosmer-Lemeshow test, p = 0,1835). The null hypothesis of Hosmer-Lemeshow represents no differences between observations and estimated values. Therefore, the results of the probit model confirm the independent variable, the interactive use of MCS, has an effect on economic commitment in phase III.

The Mann-Whitney U test was used for the dependent variable, attitudinal commitment, because data did not represent a normal distribution (Kolmogorov-Smirnov test, Z= 1,703; p<0,05). The model is significant (p= 0,031), that is, attitudinal commitment is different across the two interactive use conditions (high vs. low). The results of the probit model and the Mann-Whitney U test suggest the

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interactive use of MCS influences team members affective commitment, that is, the higher the intensity of the interactive use, the greater the level of commitment.

I also developed two analyses for contrasting the second hypothesis of the study. For the dummy variables (economic commitment phase II and phase III) a probit model was estimated, and for the continuous variable (attitudinal commitment) a correlation analysis was made, as data did not represent a normal distribution (Kolmogorov-Smirnov test,  $Z = 1,703$ ;  $p < 0,05$ ). Differences between hypotheses 1 and 2 are the number of independent variables. In hypothesis 1, there is only one independent variable, the interactive use of MCS. In hypothesis 2, there are two independent variables, the interactive use of MCS and the social identity, as I want to compare the strength of both independent variables to develop team commitment.

The probit model is significant for the variable economic commitment phase III ( $p = 0,08$ ), but it is not significant for the variable economic commitment phase II ( $p > 0,10$ ). I find similar results to the first hypothesis (see Table 3.7 for the dependent variable economic commitment phase III for the second hypothesis, and Table 3.5. for the first hypothesis).

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**Table 3.5.(6): Probit model. Dependent variable: economic commitment phase III (N:120)**

**Independent variables: Social identity and Interactive use of MCS**

Variable	Coefficient	Std. Error	t-Statistic	P-value
Constant	-0,519	0,506	-1,026	0,305
Social Identity	-0,003	0,235	-0,014	0,988
Interactive use of MCS	0,524	0,235	2,233	0,026
R <sup>2</sup> McFadden	0,031	Mean dependent variable		0,600
Akaike info criterion	1,354	S.E. dependent variable		0,486
Schwarz criterion	1,424	Log. likelihood		-78,24
Hannan-Quinn criterion	1,382	Restr. log likelihood		-80,76
LR statistic	5,041			
P-value (LR stat.)	0,080			
Observations with value =0	48	Total observations:		120
Observations with value=1	72			
Goodness of fit Hosmer-Lemeshow test				
Hosmer-Lemeshow (H-L) criterion	9,866			
Degrees of freedom	8			
P-value (Chi-squared)	0,2745			

Source: own elaboration

Table 3.5 presents the significance of the model (p-value LR statistic <0,10) and the acceptance of the null hypothesis (Hosmer-Lemeshow test, p = 0,2745). However, only the coefficient of the independent variable, the interactive use of MCS, is significant (t= 0,524; p=0,026).

I also conducted a second analysis for contrasting the second hypothesis with the continuous dependent variable, attitudinal commitment. In this analysis I used only continuous variables, either in the independent and the dependent variables. I wanted to contrast the results of the probit model, with other measures of independent variables, as traditionally the interactive use of MCS has been measured as continuous variable. Now the independent variables are measured thorough two questionnaires

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(interactive use— see appendix 3.1- and social identification – see appendix 3.2-)<sup>9</sup>. I wanted to contrast the strength of the two independent variables to influence team members' affective commitment. I want to contrast the results of the present study with the results of Haslam et al. (2006), where authors only controlled for the social identity of the groups, in spite of team members were involved in group discussion during 10 minutes in each phase. Therefore, I did the present analysis with groups in the high interactive use condition, that is, with groups that discuss and debate control information during 10 minutes in each phase. Table 3.6 presents Spearman correlation coefficients for the independent variables (Bisbe & Otley, 2004).

**Table 3.6. (7): Bivariate correlations. Dependent variable: attitudinal commitment (N:60)**

**Independent variables: Social identity and Interactive use of MCS**

Independent variables		
Interactive use of MCS	Rho Spearman	0,354
	P-value	0,005
Social identity	Rho Spearman	0,315
	P-value	0,014

Source: own elaboration

Table 3.8 presents the significance of coefficients of the two independent variables. The coefficient of the interactive use of MCS is higher than the coefficient of the social identity (0,354 vs. 0,315), and also the level of significance of the interactive use of MCS is the highest ( $p=0,005$  vs.  $p=0,014$ ). Therefore, the results of the probit model and the Spearman correlation coefficients suggest that the strength of an involvement process, that is, of the interactive use of MCS, is higher than the strength of an identification process, that is, of the social identity of the team to influence team members affective commitment (Meyer & Herscovitch, 2001).

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<sup>9</sup> Cronbach Alpha of interactive use variable is 0,486. Cronbach Alpha of social identification is 0,766.

### 3.5 DISCUSSION AND CONCLUSIONS

This chapter has two main purposes. First, it analyzes the relation between the interactive use of MCS and team members' commitment. Secondly, it compares the strength of this relation with the strength of the effect of social identity on team members' commitment, following the general model of workplace commitment of Meyer & Herscovitch (2001). The results provide empirical support for the model of this chapter (see figure 3.1). First, the interactive use of MCS increases team members' affective commitment (see Adler & Chen, 2011; Tessier & Otley, 2012). The results suggest the involvement process pushed by the interactive control system influences team members' motivation (Adler & Chen, 2011). However, the results also suggest that a minimum of intensity of use is needed to influence individual behavior, as the interactive use only influences economic commitment after phase II. It seems that team members need to spend some time together, to really create this affective bond between them. Secondly, the results also highlight that the effect of the interactive use, characterized by high involvement and participation processes, is higher than the effects of the identification process pushed by the social identity of team members. Therefore, the results suggest organizations may use MCS in a different way in order to increase individuals' commitment to group goals and projects.

This chapter provides insights for both theory and practice. First, it introduces one specific dimension of commitment to management accounting literature: the commitment to the team or group. Traditionally researchers have analyzed how accounting and control practices can increase individuals' commitment to the organization or to the profession. Nevertheless, in contemporary organizations, employees usually work in team-based environments (Berry et al., 2009). For this reason, social psychology researchers suggest differentiating foci of commitment, and also suggest that the nearest foci is the one that has the strong effect on individual behavior (see Bishop et al., 2005; Vandenberghe et al., 2004). I posit that team commitment should be considered in management accounting literature because is a key state to team effectiveness (see Mathieu et al., 2008 for a review of Team effectiveness).



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Secondly, the present chapter is the first study, to my knowledge, that provides empirical evidence of the effects of the interactive use on individual behavior (Adler & Chen, 2011). Recent management accounting researchers point out organizations should adapt MCS to collaborative environments because the traditional design of MCS are producing negative effects on individual behavior (Coletti et al., 2005; Towry, 2003; Rowe, 2004; Román, 2009). It seems that concepts such as interactive control systems and enabling bureaucracy match with these collaborative environments because enhance process related to socialization, interaction and communication between employees. However, the processes by which these control systems influence individual behavior are yet unclear (Adler & Chen, 2011, p.64). For this reason management accounting researchers are just analyzing at theoretical level these control systems to differentiate dimensions that can influence in a different manner individual behavior (Bisbe et al., 2007; Tessier & Otley, 2012). The present study answers recent calls related to the interactive control system (Bisbe et al., 2007; Ferreira & Otley, 2009; Tessier & Otley, 2012, p.11). I present a quantitative analysis to verify construct validity of one dimension of the interactive use of MCS. The results are in line with Adler and Chen (2011) proposition 14a: the use of interactive use control system will be positively associated with identified motivation. Affective commitment has been defined as a component of the identified motivation of individuals (Meyer et al., 2004, p.996).

Thirdly, the results also provide empirical evidence of the strength of two processes highlighted in the general model of workplace commitment: the involvement process and the identification process (Meyer & Herscovitch, 2001). The study compares the effects of the two processes when they are used together within groups. The results suggest that the effect of the involvement process (in that study measured with the interactive use of MCS) is stronger than the effect of the identification process (measured with the level of social identity of the team). It seems that the involvement process is nearest emotions and affect, while the identification process is nearest cognition (Wegge et al., 2006). Thus, the first one has a great impact on team members' affective commitment.

Finally, the results of this chapter have some interesting suggestions for managers and organizations. Due to the importance of team-based structures on contemporary

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organizations, managers should ensure that team members commit with group goals and projects. If not, group performance can suffer and fail (Katzenbach & Smith, 1993; Lount & Phillips, 2007). The results of this study highlight that only changing the style of use of control information in collaborative environments, managers can increase employees' commitment. Therefore, economic incentives are not the whole solution to influence individual behavior (Adler & Chen, 2011; Rowe, 2004). Combining economic literature with social psychology literature can provide a whole knowledge on individual behavior (Birnberg, Luft & Shields, 2007).

There are several factors that limit the generalizability of these results. The first one is related to the manipulation of the interactive control system in the experimental study. I manipulate intensity of the interactive use related to time-consuming, debating and discussing control information (more intensity, more time). However, the intensity of use can also be characterized by other features (as face-to-face meetings). I posit each feature could be related to different team outcomes (Bisbe et al., 2007). Future researchers should analyze the effects of these other features; since face-to-face team structure have been related to team cooperation, but not commitment (see Rowe, 2004). Secondly, the study is only focused on team commitment, but team members can be committed to others foci, as the organization. Although researchers have suggested individuals' behavior is influenced by the nearest foci of commitment, other researchers suggest individuals can be committed to various foci in a given context (as the organization, the supervisor, or the group) (Bishop et al., 2005; Vandenberghe et al., 2004). However, few researchers have analyzed how these multiple foci of commitment interact (Bishop et al., 2005; Vandenberghe et al., 2004). Finally, this study has assumed the positive effects of team members' commitment on individual behavior in collaborative environments. However, the direct effect of affective commitment on individual's performance is yet unclear (Den Hartog & Belschak, 2007; Vandenberghe et al., 2004). Affective commitment is a component of individual autonomous motivation (Meyer et al., 2004). Researchers suggest this autonomous motivation works better in team-based environments where individuals might cooperate and coordinate their resources (Adler & Chen, 2011; Gagné & Deci, 2005). Therefore, I posit affective commitment could be included as a mediating variable in future studies, where researchers analyze the relation between management control

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systems and individual performance in collaborative environments (Birnberg et al., 2007)

## **APPENDIX**

### **APPENDIX 3.1.: Interactive use of MCS questionnaire**

I adapt the instrument of Naranjo-Gil & Hartmann (2007) used for top management teams.

Using a 5-point scale, ranging from 1 (nothing) to 5 (totally), individual will indicate the extent to which he uses the MCS to:

- a) Set and negotiate goals and targets.
- b) Challenge new ideas and ways for doing tasks.
- c) Involvement in a permanent discussion with other members.
- d) Learning tool on this activity.

### **APPENDIX 3.2.: Social identification questionnaire**

I adapt the instrument of Haslam et al (2006) using a 5-point scales, ranging from 1 (nothing) to 5 (totally):

- a) I see myself as a member of my team (self-categorized).
- b) I am pleased to be a member of my team (pleased).
- c) I feel strong ties with other members of my team (tied).
- d) I identify with other members of my team (identified).

### **APPENDIX 3.3.: Attitudinal commitment questionnaire**

I adapt the instrument of Haslam et al (2006) using a 5-point scales, ranging from 1 (nothing) to 5 (totally):

- a) How sensible do you think the original idea for the childcare center was?  
(good idea)
- b) How sensible is to proceed with the childcare center? (should proceed)
- c) How likely is it that any problems with the childcare center can be overcome? (problems temporary)

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- ### APPENDIX 3.4.: Manipulation check questionnaire

- a) Respecting the nursery's budget, my group has made the following task
- b) 1 (Making the budget) 5 (Interpreting the budget)
- c) It was compulsory that all the members in my group reached an agreement on the investment to select in each phase.
- d) I have children, brothers or sisters who currently attend day care or are in early childhood education.
- e) I have done practices or worked in a nursery or kindergarten school.
- f) In each phase of the activity the members of my team have discussed only about the nursery's project
- g) I have had a good time during the time I have spent discussing the information with my colleagues
- h) While I have been taking parting the activity, I have felt that my two colleagues and I made a team.
- i) During the discussion with the members of my team we all have talked and participated.
- j) In my team, there was a member who acted as a leader.
- k) I haven't changed my first opinion during the discussion with the other members of my team.
- l) During the discussion, I have tried to convince more than learn from other opinions.

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## CHAPTER 4: STUDY II

# The effect of Interactive Control Systems and Social Identity on team members' motivation and performance

### 4.1. Introduction

### 4.2. Hypotheses development

### 4.3. Experiment design

### 4.4. Results

### 4.5. Discussion and Conclusions

### Appendix

### References

## 4.1 INTRODUCTION

Management control systems are used to increase individuals' motivation towards organizational goals. Incentives, rewards, performance reports are some of the practices used to direct employees effort and attention (Sprinkle, 2003; Birnberg, Luft & Shields, 2007). However, recent accounting researchers have found that the effects of these practices are less clear in collaborative environments, as group work<sup>10</sup> (e.g. Chenhall, 2008; Libby & Thorne, 2009; Rowe, 2004; Román, 2009). For example, Libby and Thorne (2009) find group incentives influence team performance, instead of traditional individual incentives, in collaborative situations where team members

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<sup>10</sup>The definition of a group or team includes a collection of individuals who have relations to one another that make them interdependent to some significant degree (Mathieu et al., 2008).



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might cooperate to achieve group goals. However, Rowe (2004) posits group incentives create a group problem, because allow free-riders behaviors within the group. This author suggests to adapt accounting structures to group context for directing teammates behavior toward group goals. These different effects of control practices on individual behavior have an explanation. Individual motivation works in a different way in collaborative settings (Adler & Chen, 2011; van Dick et al., 2009). While management accounting researchers have largely focused on an external regulated motivation of individuals (e.g. incentives or rewards), psychology researchers found that an autonomous or self-determined motivation fits better in group settings (Adler & Chen, 2011; Malmi & Brown, 2008; Meyer, Becker & Vandenberghe, 2004; Wong-On-Wing et al., 2010).

A review of recent studies highlights the inadequate use of the term motivation in management accounting literature (Adler & Chen, 2011; Malmi & Brown, 2008; Wong-On-Wing et al., 2010). Researchers do not differentiate among different types of motivation, in spite of each type of motivation works better in a given situation and leads to different individual behaviors (Gagné & Deci, 2005; Ryan & Deci, 2000; Wong-On-Wing et al., 2010). Based on Self-Determination Theory (Ryan & Deci, 2000) motivation reflects an intention to act. This intention can be self-initiated (intrinsic motivation) or result from external regulation (extrinsic motivation). But, extrinsically motivated behavior can take different forms, as external or identified, depending on the level of self-determinate behavior (external means that others controlled individual behavior, while identified means controlled by the own individual) (see Meyer et al., 2004; Ryan & Deci, 2000). Identified motivation works better in team settings since group members need to feel a sense of autonomy to cooperate and coordinate their resources and strategies (Adler & Chen, 2011; Libby & Thorne, 2009). I follow management accounting and psychology literature to understand if and how organizations can influence individuals' identified motivation (Adler & Chen, 2011; Ryan & Deci, 2000; Meyer et al., 2004; Wong-On-Wing et al., 2010).

Identified motivation has been related to affective commitment (Meyer et al., 2004, p.996). This identified motivation represents an affective force that binds an individual to a course of action. Identified motivation can be enhanced by two mechanisms: high

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levels of involvement and participation between individuals and high levels of individuals' identification (Adler & Chen, 2011, p. 68; Meyer et al., 2004). On one hand, recent management accounting research has drawn on concepts such as the interactive control system to lead to greater identified individuals' motivation (Adler & Chen, 2011, p.77). Interactive control system is a part of Simons' framework (1995; 2000) and describes a type of use of control information, which is characterized by regular and frequent involvement and participation of managers and also of organizational members. In this study I follow Tessier & Otley (2012) to understand how the interactive use can influence individual identified motivation. Despite the large number of empirical studies that analyze the interactive controls system in management accounting literature, yet it has not been empirically demonstrated the relation between interactive control systems and individual motivation (Adler & Chen, 2011; Tessier & Otley, 2012). I focus on the intensity of management control systems (MCS) use by group members to analyze how individuals perceive interactive control and how this perception influences individuals' motivation (Bisbe, Batista-Foguet & Chenhall, 2007; Ferreira & Otley, 2009; Tessier & Otley, 2012, p.5). In this study I posit the intensity of interactive control system has an indirect effect on team performance, via the identified motivation of team members (Adler & Chen, 2011; Lau & Moser, 2008). Unlike the previous management accounting literature tends to emphasize the role of control systems in inducing and directing individual effort and performance, I suggest the path between management control systems and individual performance do work by inducing positive affect between organizational members, as teammates (Adler & Chen, 2011; Birnberg et al., 2007).

On the other hand, identified motivation can also be enhanced by high levels of team identification (Adler & Chen, 2011; Meyer & Herscovitch, 2001). Team identity is a type of social identity representing the extent to which individuals perceive a sense of "oneness" with a particular organizational team (Haslam, 2001; Rowe, 2004; Somech, Desivilya & Lidogoster, 2009; Tajfel & Turner, 1986). Psychology researchers stress that team members with strong team identity perceive group values and group goals as more important than their personal goals (Haslam, 2001; Towry, 2003). However, in some situations team identity does not influence team members' behavior (e.g. Towry, 2003; Lount & Phillips, 2007; van Dick et al., 2009). There are two possible explanations. First, team identity might be salient or cognitively activated to influence

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team members' motivation (Adler & Chen, 2011; van Dick et al., 2009; van Knippenberg, 2000). Individuals have different social identities, such as organizational member, group member or family member. However, the individual tends to behave following the social identity which matches with the context in a given moment (van Dick et al., 2009; van Knippenberg, 2000). Secondly, although traditionally researchers have analyzed direct relation between social identity and individual performance (Rowe, 2004; Towry, 2003; van Dick et al., 2009), nevertheless, I posit the effect of social identity on individual performance is mediated by the individual identified (Meyer & Herscovitch, 2001). In this study, I analyze how team identity is positively associated with team members' identified motivation, and how this relation is moderated by the salience of the team.

This study has three main purposes. First, it analyzes the indirect effect of the interactive control system on individual performance in team-based settings. Secondly, it analyzes also the indirect effect of team identity on individual performance. An affective and motivational state is suggested as the mediating variable between the interactive control system, social identity and team members' performance, that is, the identified motivation of teammates. Finally, the study analyzes the moderating effect of the salience of team identity on individual motivation. The present study is tested using the same experiment of study I (Chapter 3). Nevertheless, a brainstorming task is added to measure individual performance within teams (van Dick et al., 2009). The design of the experiment is 2x2 for analyzing the effect of the two independent variables, interactive control system and team identity, on team performance. The intervening variable, the identified motivation, is also measured for contrasting the mediating model proposed (Birnberg et al., 2007; Mathieu et al., 2008; Rowe, 2004). The revised Simons' framework (see, Tessier & Otley, 2012) seeks new opportunities to researchers for quantitative analysis to verify construct validity of interactive control systems and for analyzing cause-effect relations between control systems and individual behavior. Experiments allow quantitative analysis for studying these cause-effect relations within teams (see Libby & Thorne, 2009; Sprinkle 2003; Towry, 2003). The results of the experiment support the hypotheses. First, the intensity of use of the interactive control system influences team members' motivation which increases team performance. Secondly, team identity also influences team performance through team members' identified

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motivation. Moreover, the effect of team identity on team members' motivation is moderated by the level of team salience.

The present chapter attempts to contribute to the management accounting and social psychology literature in several ways. Despite considerable attention to the relation between control systems and external motivation in management accounting literature (Malmi & Brown, 2008), the results provide evidence of the relation between interactive control systems and other type of individual motivation, that is, the identified motivation (Adler & Chen, 2011; Meyer et al., 2004). Secondly, the present chapter provides a quantitative analysis for construct validity for the revised framework's concepts of Simons Levers of Control (Tessier & Otley, 2012). One dimension of the interactive control system is manipulated, related to the intensity of its use by team members. Furthermore, the results stress this interactive use has an indirect effect on individual performance. The results are in line with Tessier & Otley (2012) suggestions: organizational members have emotional responses to controls, and these responses can be positive, negative or neutral. It seems the intensity of use of MCS produces positive responses on individuals' behavior in collaborative environments. Thirdly, this chapter sheds some light on the relation between social identity and team performance. The results suggest this relation is not direct, but via an affective state of team members, that is, via the identified motivation. Moreover, the results suggest some level of salience is needed to influence individual motivation through social identity (van Dick et al., 2009). Finally, this study provides a more comprehensive knowledge about the relation between input variables, as management control systems and individual features such as social identity, and team performance. Only including intervening variables, as motivational and affective states, researchers can identify the process by which organizational inputs (as accounting and control practices) can influence team outcomes (Birnberg et al., 2007; Mathieu et al., 2008).

The remainder of this chapter is organized as follows. Section 4.2 describes the hypotheses related to individual motivation, interactive control system, team identity and team performance. Section 4.3 summarizes the design of the experiment. Section 4.4 contains the results of the experiment. Finally, this chapter is concluded with section 4.5 which contains a discussion of the findings.

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## 4.2 HYPOTHESES DEVELOPMENT

Motivation research distinguishes intrinsic from extrinsic motivation (Deci & Ryan, 1985; Gagné & Deci, 2005; Ryan & Deci, 2000). On one hand, a person is described as intrinsically motivated if he or she performs an activity for its own sake, and derives pleasure and satisfaction from participating in the activity. On the other hand, a person is extrinsically motivated when performs the activity as a means to an end. Furthermore, according to Self-Determination Theory (Ryan & Deci, 2000), extrinsically motivated behavior can take different forms as external and identified. Differences are on the level of perceive autonomy or self-determination by the individual. On one hand, external reasons are those where behavior is explained by reference to external authority, fear of punishment, or rule compliance, and it is associated with feelings of being controlled (e.g. rewards or incentives). On the other hand, identified regulation is captured by reasons involving acting from one's own values or goals, and typically takes the form of "I want". Although the task themselves might not be enjoyable, they are typically experienced as somewhat internal or self-determined (e.g. studying for an upcoming exam rather than going out with friends) (Adler & Chen, 2011; Gagné & Deci, 2005; Wong-On-Wing et al., 2010).

According to Self-Determination Theory (Ryan & Deci, 2000), external regulation (e.g. rewards or punishment) can produce negative effects on individuals' behavior in collaborative environments, including lower task satisfaction or lower effort (Lau & Moser 2008; Malmi & Brown, 2008; Meyer et al., 2004). The reason is that rewards and punishments are related to hierarchical relations where the individual is controlled by an external regulation. In this situation the individual works because "s/he has", not because "s/he wants". Contrary, in team work situations individuals ought to cooperate and coordinate their resources and effort to achieve team goals. It is important that individuals really accept group goals, rather than goals are imposed by external regulation to team members (Adler & Chen, 2011; van Dick et al., 2009). In this collaborative situation, an identified motivation may enable coordination and promote supportive work climates between coworkers. This identified motivation has been related to work group supports, positive affect, job satisfaction and autonomy work climates (Adler & Chen, 2011; Meyer et al., 2004). I follow management accounting and psychology literature to identify potential antecedents of identified

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motivation, and two mechanisms can be used: high levels of interaction and participation, and high levels of identification (Adler & Chen, 2011, p. 68; Lau & Moser, 2008; Meyer & Herscovitch, 2001; van Dick et al., 2009).

#### **4.2.1 Interactive control system, identified motivation and team performance**

Recent management accounting researchers have suggested the use of interactive control systems to influence individual identified motivation (Adler & Chen, 2011). This suggestion points out that Simons' framework (1995, 2000) can be analyzed at individual and team level despite the fact that traditionally has been analyzed at organizational level (see Abernethy & Brownell, 1999; Davila, Foster & Oyon, 2009; Henri, 2006; Kominis & Dudau, 2012; Naranjo-Gil & Hartmann, 2007). In the present study, I follow the revised framework of Simons Levers of Control to understand the change on the level of analysis (Tessier & Otley, 2012). First, the definition of interactive use of control systems differentiates two dimensions of the concept: the focus (on strategy uncertainty) and the level of intensity (by superiors and by organizational members) (Bisbe et al., 2007; Ferreira & Otley, 2009). If researchers differentiate dimensions of a concept, it is easy to analyze the antecedents and consequences of each dimension (Bisbe et al., 2007). Secondly, the revised framework differentiates between managerial intentions for controls and employee perceptions of these controls (Tessier & Otley, 2012). In this study I am interested on how the dimension of intensity of interactive control system affects employees' motivation in collaborative situations (Adler & Chen, 2011; Tessier & Otley, 2012).

Researchers of Simons' framework have described how the intensity of the interactive use of MCS is related to high levels of participation and involvement of organizational members, and how these processes produce different effects on individual behavior. On one hand, Abernethy & Brownell (1999) argue that a defining feature of interactive use of budgets is the continual interaction between organizational members. This interaction involves not only participation but also an ongoing dialogue between organizational members. Henri (2006) points out that interactive control system is used when the involvement of employees from different functional areas, as

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cross-functional teams, is needed within the organization. Naranjo-Gil & Hartmann (2007) emphasize the role of the interactive use to engage in interaction with organizational members, across levels and functions. Mundy (2010) points out that organizations use interactively the control system to involve employees in budgetary processes. On the other hand, Simons' framework researchers have also described the positive emotional responses of employees when the interactive control is used, and how these emotional responses influence individuals' behavior in collaborative situations. For example, Abernethy & Brownell (1999) suggest interactive control system is consistent with the operation of cross-functional liaison groups, and help team members to reach a compromise with their goals. Mundy (2010) argues interactive control increases employee commitment. Kominis & Duda (2012) point out that interactive control systems drive a socialization process within horizontal structures of partnerships, which induces a group-thinking and group frame.

This group frame is the key to influence identified motivation and is pushed by the intensity of the interactive use (Adler & Chen, 2011; Rowe, 2004). The intensity of use tends to be time-consuming (Henri, 2006; Mundy, 2010). If team members spend more time together discussing and debating control information, they increase the sense of self-control (Wong-On-Wing et al., 2010). Furthermore, when time is spending together, team members feel close to each other, and an affective reaction is generated within the team (Blascovich, 2008; Latané, 1981; Spence et al., 2011). Identified motivation is associated with affective commitment, an important state which explains employee behavior (Den Hartog & Belschak, 2007; Lau & Moser, 2008; Mathieu et al., 2008). Affective commitment reflects an affective bond and contributes to develop a mind-set in team members characterized by a desire to follow a course of action. In this situation, team members feel they want to exert effort for achieving team goals (Kidwell & Bennett, 1993; Lau & Moser, 2008; Meyer & Herscovitch, 2001). Following this reasoning, I posit identified motivation is enhanced by the interactive use of MCS, and, therefore team performance increases because team members increase their levels of effort on group tasks. I follow previous accounting researchers that have analyzed the relation between other accounting practices (as budget participation or the use of non-financial performance measures) and individual performance with mediating models, where motivation and commitment were the intervening variables (e.g. Lau & Moser, 2008; Nouri &

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Parker, 1998; Scott & Tiessen, 1999; Won-On-Wing et al., 2010). For example, Lau & Moser (2008) demonstrate that the use of nonfinancial performance measures is associated with affective commitment, which in turn increases employee job performance. And Nouri & Parker (1998) results highlight that budget participation is associated with individual commitment, which in turn increases individual performance. Therefore, the following hypothesis is formulated:

Hypothesis 1: The interactive control system increases team performance, mediated through team members' identified motivation.

#### **4.2.2 Team identity, identified motivation and team performance**

Identified motivation can be enhanced by high levels of identification or association with an entity or group (Adler & Chen, 2011; Meyer & Herscovitch, 2001). Social identity theory (Tajfel & Turner, 1986; Haslam, 2001) argues that people tend to classify themselves and others into various social categories (e.g. organizational membership, religious or gender). Team identity is a particular social identity and represents the extent to which individual team members perceive a sense of "oneness" with a particular organizationally based team (Ahsforth & Mael, 1989; Somech et al., 2009). Social identity researchers point to team identity to increase team performance, because those individuals who identify with the team, prioritize group goals instead of their individual goals (Haslam, 2001; Haslam et al., 2006). However, team identity is not always related to team performance (e.g. Towry, 2003; van Dick et al., 2009). There are two possible explanations. First, the influence of team identity on team members' behavior is not directed, but mediates by team members' identified motivation (Meyer & Herscovitch, 2001; van Knippenberg, 2000). Secondly, other process is needed for the emergence of identified motivation through team identity: the salience of the team identity (Adler & Chen, 2011; van Knippenberg, 2000, p. 358).

On one hand, team identity is associated with a cognitive process. That is, the individual analyses his social context, interprets this context and then adapt his behaviour to this context (Haslam, 2001; van Knippenberg, 2000). Therefore, first a



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categorization process is initiated, that means, the individual defines himself with regard to the social environment (O'Fallon & Butterfield, 2012). But a second process is needed to influence individual behaviour through team identity: a motivational and affective state (Hogg et al., 2004; Meyer & Herscovitch, 2001; Somech et al., 2009). When the individual feels a positive emotion to his team, thus, the team psychologically turns into a part of the self (Chidambaran & Tung, 2005; Haslam et al., 2006; van Dick et al., 2009; van Knippenberg, 2000). I posit individual behavior is regulated by his identified motivation when this second process is initiated, but not before. At this moment, the individual begins to act and think in accordance with the group's perceived prototypical characteristics, because he perceives group goals are more important than his individual goals. Therefore, a congruent individual behaviour is to exert more effort to achieve team goals, as the individual specially values the group (Ashforth & Mael, 1989; Ellemers, de Gilder & Haslam, 2004; van Dick et al., 2009). In summary, firstly a categorization process is needed. Secondly, an affective process may follow the categorization process. And when this second process emerges, thus, identified motivation is enhanced, therefore, individuals value group goals and they are willing to work to achieve these group goals. Therefore, the following hypothesis is formulated:

Hypothesis 2: Team identity increases team performance, mediated through team members' identified motivation.

On the other hand, team identity needs to be salient or cognitively activated to influence group members' motivation (Adler & Chen, 2011; van Dick et al., 2009; van Knippenberg, 2000). Two concepts may be differentiated related to team identity: team identification and salience. Team identification refers to the individual defining him- or herself in terms of a team or group. Salience describes the extent to which a specific group, amongst the many social categories possible an individual has in a given moment, is relevant for his thinking, feeling or behavior. Moreover, salience depends on the accessibility of a category and also on the fit of this category to the situation or context. Therefore, if the context reminds a group situation, the group identity is activated to influence individual motivation. For example, Towry (2003) demonstrates a moderating influence of the incentive system on the direct effect of team identity on team members' effort. Under a horizontal incentive system (which is

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relying on team self-management), a strong team identity increases team members' effort. However, under a vertical incentive system, there is no relation between team identity and team effort. Oppositely, Rowe (2004) fails to show how team identification mediates the relation between accounting structure and team performance. But I suggest two possible explanations. First, Rowe (2004) proposes a direct relation between accounting structure and team identification, however, I suggest it is a moderating relationship (Towry, 2003; van Dick et al., 2009). That is, if the accounting structure reminds a group context, therefore, the individual interprets this context and his group identity is being activated to influence performance. Secondly, accounting structure used in Rowe (2004, p.1162) captures individual and group information. And when individual and group information is present the individual frame is more salient than the group frame (Gaertner et al., 2002). Therefore, the context of Rowe (2004) does not remind a group context, therefore, does not activate the group salience. Following this reasoning, I posit context may activate group salience, and when group salience is activated, team identity influences individual motivation (van Dick et al., 2009; van Knippenberg, 2000):

Hypothesis 3: The salience of team identity moderates the relation between team identity and team members' identified motivation, that is, the higher the group salience, the greater the impact of team identity on team members' identified motivation.

## 4.3 EXPERIMENT DESIGN

This experiment uses a 2 x 2 (Interactive Use x Team Salience) between-subjects factorial design. There are four group conditions, but also a control condition is added. This condition represents individuals working alone and allows to compare individual motivation across conditions (that is, when an interactive use of MCS is used and when it is not used) (Karau & Williams, 1993; van Dick et al., 2009). The experiment was programmed and conducted using the z-Tree software (Fischbacher, 2007) in a laboratory.

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The experimental design combined two tasks: a group decision task following the work by Haslam et al. (2006) and a brainstorming task following the work by van Dick et al. (2000). The first task is the same task used for study I (Chapter 3) of this dissertation. This task was used for two purposes. First, I need a context where the interactive use of a control system can be manipulated. The task represents a group decision task where team members may discuss control information during three phases. The mean control system used in this task was the budget of a group project, because is one of the major features of MCS and is used to facilitate organizational members' commitment (Abernethy & Brownell, 1999). Secondly, I need a task where identified motivation can be measured. I follow Haslam et al. (2006) for measuring commitment as a proxy of identified motivation because commitment has been showed as a component of motivation (Meyer et al., 2004, p.991, 996)<sup>11</sup>. The second task is a group brainstorming task which represents an additive task where individual and also group performance can be measured (Lount & Phillips, 2007; van Dick et al., 2009).

#### **4.3.1 Manipulation and measures**

There are five variables in this study: two independent variables (interactive control system and team salience); two intervening variables (commitment and team identification) and one dependent variable (team performance).

The interactive control system was manipulated through one of its dimensions: the intensity of use at team level. Intensity means more interaction between team members to discuss and resolve problems. Intensity tends to be time-consuming (Henri, 2006; Mundy, 2010). As the first task allowed team members to discuss and debate together control information about the project, I manipulated the intensity of use controlling the time team members used to this debate. In high interactive use condition, team members were allowed to discuss and debate control information for 10 minutes, in each phase. In low interactive use condition, team members were allowed for only 1 ½ minutes, in each phase. The experimenter controlled the

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<sup>11</sup> Commitment is a multidimensional construct (see Meyer & Herscovitch, 2001). In this study I analyze the affective dimension, which means, the attitudinal attachment of team members to team project. Normative and continuance commitment are not measured.

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discussion so that the debate only focused on the project control information and not personal issues, and also controlled that the communication was within and not between teams.

The independent variable of team salience was manipulated combining two procedures that have been used in previous works, color T-shirts and group name (Haslam, 2001; Towry, 2003). First, the use of color increases the salience of groups (Towry, 2003). The presence of two color groups promoted self-categorization, because the context reminds difference between in-group and out-groups. Secondly, meaning of the in-group could be increased by reinforcing the group identity or the individual identity with symbols and messages (Haslam et al., 2006). In high team salience condition, each team was asked to generate a codename for their group. Participants should fill their group name in each of their responses. Oppositely, in the low team salience condition, participants should fill their individual name in each of their responses<sup>12</sup>.

The two intervening variables were measured with two questionnaires at the end of the group decision task, and before participants played the brainstorming task. I followed Haslam et al. (2006) to measure the level of team identification as a dimension of team identity (Rowe, 2004). This questionnaire was answered at individual level (see Appendix 4.1). I also measured the mediating variable attitudinal commitment, as a proxy of identified motivation, with a questionnaire at the end of the first task (Haslam et al., 2006; Meyer et al., 2006) (see Appendix 4.2).

The dependent variable, team performance, was measured with the level of effort each team developed in the brainstorming task, that is, with the number of ideas reached by the group (van Dick et al., 2009). Upon completion of the brainstorming task, a third questionnaire was answered to assess manipulation checks and some demographic information (see Appendix 4.3).

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<sup>12</sup> Efforts were made to avoid other types of social identification between group members (e.g. friendships can contribute to members' group identification, Van Dick et al., 2009). The experimenter made sure that individuals of the same field were assigned to different teams, and further, members of a team not known in advance.

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#### 4.3.2 Participants and procedure

A total of 144 postgraduate students from Pablo de Olavide University at Seville participated in this experiment in November 2010 (no specific knowledge or skills were required to participate). It was formed 10 teams of 3 students (total: 30 individuals) for each group condition. And also there were 24 students working alone in the control condition. The mean age of the participants was 24 years. The 45,83% were male, and the 54,17% were female. A show up fee of 5 euros was used<sup>13</sup>. Further, a completely random lottery of 200 euros was drawn among all the participants. Participation in the experiment took about 45 minutes on average.

Participants were randomly assigned to teams of three individuals when they arrived to the lab. First, the experimenter explained participants they were participating in a group decision-task. Groups had to select the level of investment in the construction of a Childcare Center in their city (Haslam et al., 2006). The study had three temporal phases. At each phase groups were presented with control information (e.g. budgets, costs) about the progress of the project, and team members could debate and discuss this control information<sup>14</sup>. At each phase, groups were given more negative information than the previous phase (e.g. a budget report with a 10% increase in total costs; it had appeared a contaminant material in the children's sandpit). Nevertheless, none of these problems were fatal for the project's viability, but their existence made it clear that the project was in difficulty. After each phase, each team, through its members, should decide the level of investment on the project<sup>15</sup>.

Secondly, participants initiated the brainstorming task, following the work of van Dick et al. (2009). Team members were asked to brainstorm ideas in their individual

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<sup>13</sup> This study used a 5 euro fixed incentive, instead of an incentive linked to performance, because wanted to avoid participants could be motivated by external rewards. Recent accounting researchers stress that individual and fixed incentives do not influence individual performance at group level (see Libby & Thorne, 2009; Román, 2009).

<sup>14</sup> Participants in control condition used the same control information. However, these participants could not debate and discuss information, because they were playing an individual decision task. This condition allowed to contrast the effect of one dimension of the interactive control system, related to the involvement and participation processes, on individual motivation (comparing interactive use conditions with control condition).

<sup>15</sup> Participants respond individually because I analyze a motivation problem, not a group decision task (Haslam et al., 2006).

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computers, about activities that could be done in a Childcare center<sup>16</sup>. Typical brainstorming instructions were provided (e.g. they were asked to only use verbs to describe the activity, they were informed that there were no wrong answers, they should write down any possible idea irrespectively of their personal preferences)<sup>17</sup> (Diehl & Stroebe, 1987; van Dick et al., 2009). The support material used in the experiment is shown in a specific Appendix, at the end of the dissertation<sup>18</sup>.

## 4.4 RESULTS

Table 4.1 presents the descriptive statistics of three variables: the dependent variable - performance-, and the intervening variables—commitment and team identification-. Performance is measured with the number of ideas reached by each individual. Commitment is measured with the mean of the four items of the questionnaire (see Appendix 4.2). And team identification is measured with the mean of the four items (see Appendix 4.1)<sup>19</sup>. I present these results at individual level for comparing differences between the four conditions and the control condition, which represents individuals working alone. Manipulation check questions were satisfactory.<sup>20</sup>

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<sup>16</sup>Participants in control condition played an individual brainstorming task.

<sup>17</sup> In the manipulation check questionnaire the previous experience and knowledge of participants in childcare center activities were controlled (see Appendix 4.3)

<sup>18</sup> See Appendix: Support material for experimental studies.

<sup>19</sup> Cronbach Alpha of commitment is 0,761. Cronbach Alpha of team identity is 0,773.

<sup>20</sup> Manipulation was checked with Kruskal-Wallis test across five conditions, because data did not represent a normal distribution (Kolmogorov-Smirnov test ;  $p < 0,05$ ).

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**Table 4.1.(8): Descriptive statistics at individual level (5 conditions, N: 144)<sup>21</sup>**

	High interactive use of MCS (N: 60)			Low interactive use of MCS (N: 60)		
		Mean	S.E.		Mean	S.E.
High team salience (N: 60)	Performance	17.37	6.95	Performance	17.23	5.81
	Commitment	3.76	0.82	Commitment	3.46	1.06
	Team identification (N = 30)	3.73	0.84	Team identification (N = 30)	3.55	0.78
Low team salience (N: 60)	Performance	17.43	7.28	Performance	16.53	5.34
	Commitment	3.93	0.77	Commitment	3.53	0.79
	Team identification (N = 30)	3.57	0.79	Team identification (N = 30)	3.43	0.89
Individual condition (N: 24)	Performance <sup>22</sup>	10.92	3.40			
	Commitment	3.32	0.74			

Source: own elaboration

I did two types of analyses for the first hypothesis: an analysis of mean difference between conditions, and a variance-based approach for the estimation of the mediating model. Table 4.2 presents the descriptive statistics of two variables: performance and commitment, but only for the two interactive use conditions (high vs. low) and the control condition.

**Table 4.2.(9): Descriptive statistics at individual level (3 conditions, N: 144)**

High interactive use of MCS (N: 60)			Low interactive use of MCS (N: 60)			Individual control condition (N: 24)		
	Mean	S.E.		Mean	S.E.		Mean	S.E.
Performance	17.40	7.06	Performance	16.88	5.54	Performance	10.92	3.40
Commitment	3.85	0.79	Commitment	3.49	0.93	Commitment	3.32	0.74

Source: own elaboration

I compare individual behavior between the two interactive use conditions (high vs. low) and the control condition. For the mediating variable of commitment I did Kruskal-Wallisnon-parametric test, because data did not represent a normal distribution (Kolmogorov-Smirnov test;  $Z = 1,668$ ;  $p < 0,05$ ). I found that the model

<sup>21</sup> In brackets it is indicated the number of the table or figure in the full document.

<sup>22</sup> Participants in control condition could not discuss the control information with colleagues because they were playing alone (an individual decision task and an individual brainstorming task). For this reason team identity was not measured in this condition.

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was significant ( $p < 0,10$ ), that is, commitment was different across the three conditions. I also did Mann-Whitney non-parametric test between the two use conditions, and the model was also significant ( $p < 0,05$ ), that is, team members' commitment differed across the two interactive use conditions. These results suggest the interactive use of MCS produces a direct and positive effect on team members' commitment. The highest level of commitment is reached when teams use with high intensity the interactive control system (see Table 4.2).

Secondly, I developed an ANOVA analysis for the dependent variable of performance, because data represented a normal distribution (Kolmogorov-Smirnov test;  $Z = 0,995$ ;  $p = 0,275$ ). The model was significant ( $F = 11,013$ ;  $p < 0,001$ ). That is, performance was different across the three conditions analyzed (high interactive use, low interactive use and the control condition). However, I did not find significant differences comparing only high and low interactive use conditions (results for Student's-test;  $t = 0,446$ ;  $p > 0,10$ ). Therefore, related to performance, I only found that team members, in the two interactive use conditions, developed higher levels of effort, than individuals in the control condition (see Table 4.2).

Following previous results, I want to contrast the mediating model proposed in the first hypothesis. That is, if interactive control systems influence team performance, through team members' identified motivation. Now, I developed the analysis at group level, comparing group behavior across the two interactive conditions (Somech et al., 2009; Towry, 2003; van Dick et al., 2009). The mediating model was tested using the partial least squares (PLS) technique (Chin, 1998; Wold, 1982). PLS is a variance-based approach for the estimation of path models involving latent constructs that are indirectly measured with multiple indicators. PLS can estimate models with small sample sizes and does not make distributional assumptions about the data used for modelling (Chin, 1998). The independent variable is a dummy variable (0, low interactive use; 1, high interactive use). The four items of commitment (see Appendix 4.2), are used as indicator of the latent mediating variable<sup>23</sup>. The dependent variable, team performance, is measured with the number of ideas reached at group level.

Related to the structural model, Figure 4.1 displays the results from the test of the full model. It contains the detailed output statistics of the analysis of path coefficients in

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<sup>23</sup> Composite reliability: 0,905; Average variance extracted: 0,705.



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the structural model, and reports on the significance of the standardized  $\beta_s$  that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement.

**Figure 4.1.(4): The structural model: interactive control system, commitment and team performance (N: 40)**



<sup>a</sup>Significant at 0,001 level, <sup>b</sup>Significant at 0,01 level ( $R^2$  0,132)<sup>24</sup>.

Source: own elaboration

These results point to the use of interactive control systems at team level to increase team performance, via the group members' commitment, that is, via the group members' identified motivation (the total effect is:  $0,262 \times 0,363 = 0,095$ ) (see Figure 4.1).

The second hypothesis of the present study also predicts a mediation relation, but now the independent variable is the team identity<sup>25</sup> instead of the interactive use of MCS. The mediating model was tested again using the partial least squares (PLS) technique (Chin, 1998). The four items of team identification (see Appendix 4.1) are used as indicator of the latent variable of team identity<sup>26</sup>. Figure 4.2 displays the results from the test of the full model. It contains the detailed output statistics of the analysis of path coefficients in the structural model, and reports on the significance of the standardized  $\beta_s$  that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement.

<sup>24</sup> I did two supplemental analysis: 1) I analyzed the direct path between the interactive use of MCS and team performance, but it was not significant ( $p > 0,10$ ). 2) I also checked the full model of figure 1 at individual level. I found similar results between the interactive use of MCS and commitment ( $t = 0,211$ ;  $p < 0,05$ ). However, the path coefficient between commitment and performance was lost ( $t = 0,180$ ;  $p > 0,10$ ).

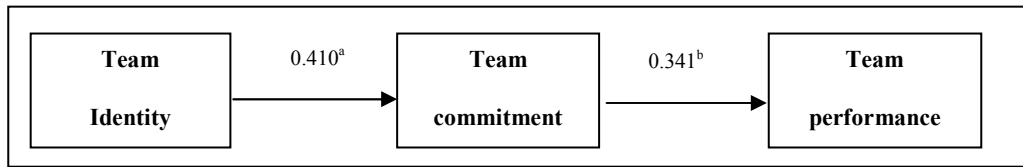
<sup>25</sup> Team identity at group level represents the collective level of team identification occurring across all members of a team (Gundlach et al., 2006; Somech et al., 2009).

<sup>26</sup> Composite reliability: 0,816; Average variance extracted: 0,537.

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Figure 4.2(5): The structural model: team identity, commitment and team performance (N: 40)



<sup>a</sup>Significant at 0,001 level, <sup>b</sup>Significant at 0,01 level ( $R^2$  0,116)<sup>27</sup>.

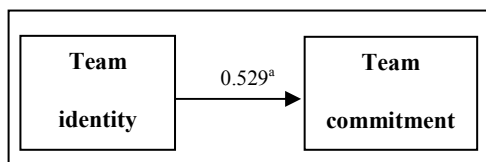
Source: own elaboration

These results point out that team identity increases team performance indirectly via the group members' commitment (the total effect is:  $0,410 \times 0,341 = 0,139$ ) (see Figure 4.2).

Finally, I analyse the third hypothesis that predicts team salience moderates the relation between team identity and team members' identified motivation. I use the partial least squares (PLS) technique (Chin, 1998; Wold, 1982) and I compare regression coefficients between high team salience groups and low team salience groups (Baron & Kenny, 1986). Figures 4.3 and 4.4 display the results from the test of the full model. It contains the detailed output statistics of the analysis of path coefficients in the structural model, and reports on the significance of the standardized  $\beta_s$  that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement.

Figure 4.3. and 4.4.(6): The structural model: team identity and team commitment

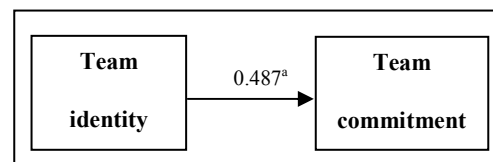
Figure 4.3.: High team salience (N: 20)



<sup>a</sup>Significant at 0,001 level; ( $R^2$  0,280).

Source: own elaboration

Figure 4.4.: Low team salience (N:20)



<sup>a</sup>Significant at 0,001 level; ( $R^2$  0,237)

<sup>27</sup> I did two supplemental analysis: 1) I analyzed the direct path between team identification and team performance, but it was not significant ( $p > 0,10$ ). 2) I also checked the full model of figure 2 at individual level. I found similar results between team identification and commitment ( $t = 0,252$ ;  $p < 0,01$ ). However, the path coefficient between commitment and performance was lost ( $t = 0,174$ ;  $p > 0,10$ ).

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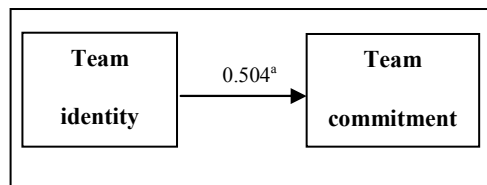
### The effect of Interactive Control Systems and Social Identity on team members' motivation and performance

These results support the third hypothesis, the higher the salience of the team, the greater the effect of team identity on group members' commitment, that is, group members' identified motivation.

I conducted a supplemental analysis focused on the manipulated independent variable of the interactive use of MCS. I followed previous researchers who pointed out organizational variables can influence salience of a social category (Towry, 2003; van Dick et al., 2009; van Knippenberg, 2000). Towry (2003) study demonstrates the design of incentive systems influences salience of a social category. In the study of Towry (2003) team identity influences performance only when teams work with a group horizontal incentive, that is, in a context that reminds a group frame. I have described that the intensity of the interactive use of MCS pushed a group frame between team members (Adler & Chen, 2011; Rowe, 2004). Thus, I recalculated the previous models of the third hypothesis, but now the moderator variable was the interactive use conditions instead of the salience of team identity. I expected the higher the intensity of interactive use of MCS, the greater the effect of team identity on team commitment. Figures 4.5 and 4.6 display the results from the test of the full model using the partial least squares (PLS) technique (Chin, 1998), for the high interactive use condition, and for the low interactive use condition. It contains the detailed output statistics of the analysis of path coefficients in the structural model, and reports on the significance of the standardized  $\beta_s$  that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement.

**Figure 4.5 and 4.6(7): The structural model: team identity and team commitment**

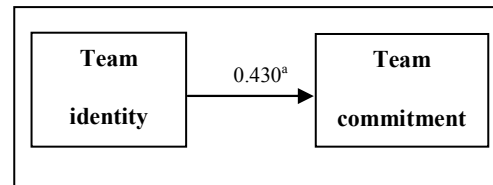
**Figure 4.5.: High interactive use of MCS (N: 20)**



<sup>a</sup>Significant at 0,001 level; ( $R^2$  0,254).

Source: own elaboration

**Figure 4.6.: Low interactive use of MCS (N:20)**



<sup>a</sup>Significant at 0,001 level; ( $R^2$  0,185)

These results are in line with Towry (2003) results, which indicate that the design of incentive systems moderates the direct effect of team identity on individuals' behaviour. The present chapter extends this relation to other feature of MCS, which is

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characterized by a different use instead of a different design. An interactive use of MCS moderates the direct effect of team identity on team members identified motivation, that is, the higher the interactive use of MCS, the greater the effect of team identity on individuals' behaviour.

## 4.5 DISCUSSION AND CONCLUSIONS

This chapter analyses the effect of the interactive use of MCS and team identity on individuals' identified motivation and team performance. The results provide evidence that the interactive use of MCS increases team members' performance, via the identified motivation. Further, team identity also influences team performance via this type of motivation. Finally, the results support that the effect of team identity on team members' motivation is enhanced by the salience of the group identity.

This research provides useful insights for both theory and practice. First, this chapter sheds some light related to the role of control system on individuals' motivation in collaborative situations. Although, traditional management accounting researchers have focused on external motivation, the results of the present study demonstrate that control systems can influence other type of motivation, as identified. Identified motivation works better than external motivation in collaborative situation (Adler & Chen, 2011; Mundy, 2010). Thus, organisations should analyse what type of motivation works better in a given situation to design and use correctly control systems. This chapter suggests that if organizations changed the style of use of control information within teams, team members' would be highly motivated.

Secondly, this chapter stresses the importance of the style of use of the control information to influence employees' performance. Organizations have moved toward horizontal structures, where control and regulation should combine with cooperation and coordination. Communication, socialization and interaction processes are important to support these opposite objectives (Adler & Chen, 2011; Berry et al., 2009; Chenhall, 2008). I follow the revised framework of Simons Levers of Control (Tessier & Otley, 2012) and I manipulated one dimension of the interactive use of MCS: the intensity of use by team members. This dimension points to an involvement

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process which produces positive effects on individual motivation (Tessier & Otley, 2012). The results support an indirect relationship between this dimension, the intensity of use, and individual performance. Therefore, the revised framework seeks an opportunity to future researchers' to analyse the effect of other dimensions of interactive control system and individual performance (Tessier & Otley, 2012, p.11).

Thirdly, this chapter sheds some light related to the role of team identity on team performance. Two mechanisms are needed to influence team members' behaviour through team identity. First, team identity might be cognitively activated. And organizational context can activate this team identity. Following Towry (2003), I demonstrate the intensity of the interactive use of MCS can moderate the effect of team identity on team members' motivation. That is, the higher the intensity, the greater the effect of team identity on individuals' motivation. Secondly, the influence of team identity on individuals' performance is mediated by their identified motivation (Meyer & Herscovitch, 2001; van Knippenberg, 2000). I suggest that, besides the cognitive process of team identification, also emotion and affect is needed to influence individual behaviour through the team identity.

Finally, this chapter introduces a mediation model in management accounting research focused on team performance (Birnberg et al., 2007; Mathieu et al., 2008). Mediating models can help understanding the processes by which organizational variables, such as control systems, and individual features, such as social identity, influence group performance. The key is to identify mediating variables as commitment or individual motivation which help to understand the process by which organizational variables influence group behavior (see Birnberg et al., 2007). The mediating model that I present can be applied to other features of control systems that have been recently highlighted in management accounting literature, as belief system, enabling bureaucracy or cultural controls (Adler & Chen, 2011; Malmi & Brown, 2008).

As any empirical study there are several limitations. Some limitations are inherent to the experimental method, such as the manipulation of the interactive control system. As this variable has been traditionally analysed at organizational level, I have found difficulties in its manipulation. I focused on one dimension of the interactive use, the intensity use by organizational members, and I followed Simons' researchers'

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description to identify one important feature for manipulation, the time-consuming (e.g. Abernethy & Brownell, 1996; Henri, 2006; Kominis & Dudau, 2012; Mundy 2010). However, the intensity of the interactive use is also characterized by other features, as face-to-face meetings. Following Social Impact Theory individual motivation at team level depends on distance between team members (physical - individuals working in different physical spaces- or psychological -e.g. individuals with different goals-) (Chidambaram & Tung, 2005; Latané, 1981). Therefore, future research could analyze the impact of other feature of the interactive control system, as face-to-face relations, on individual motivation. Limitations may also be found on the type of task used to measure team performance, a brainstorming task. Van Dick et al. (2009) suggest the type of task can moderate the effect of team identity on team performance. Moreover, Libby & Thorne (2009) also suggest the type of task moderates the effect of control system on team performance. I suggest the important feature is not the type of task, but if the task represents a really collaborative situation where team members can gain benefits of cooperation (Libby & Thorne, 2009). Nevertheless, I cannot demonstrate this suggestion with the design of the experiment. Future researchers can fit the model of this study with other type of group tasks. In sum, this study stresses the importance of following an input-mediator-outcome framework of teamwork in management accounting research (Birnberg et al., 2007; Mathieu et al., 2008). Future work is needed to analyse every dimension of the interactive use of MCS and team identity, and how the relationship between them affects group performance.

## **APPENDIX**

### **APPENDIX 4.1.: Team identification questionnaire**

I adapt the instrument of Haslam et al (2006) using a 5-point scales, ranging from 1 (nothing) to 5 (totally):

- a) I see myself as a member of my team (self-categorized).
- b) I am pleased to be a member of my team (pleased).
- c) I feel strong ties with other members of my team (tied).
- d) I identify with other members of my team (identified).

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#### APPENDIX 4.2.: Attitudinal commitment questionnaire

I adapt the instrument of Haslam et al (2006) using a 5-point scales, ranging from 1 (nothing) to 5 (totally):

- a) How sensible do you think the original idea for the childcare center was? (good idea)
- b) How sensible is to proceed with the childcare center? (should proceed)
- c) How likely is it that any problems with the childcare center can be overcome? (problems temporary)
- d) How disappointed will the community be if the childcare center does not proceed? (Community disappointed).

#### APPENDIX 4.3.: Manipulation check questionnaire

Please, in order to end up with the activity, ranging from 1 to 5 your satisfaction with the following questions (1=completely disagree; 5=completely agree)

- a) Respecting the nursery's budget, my group has made the following task  
1 (Making the budget) 5 (Interpreting the budget)
- b) It was compulsory that all the members in my group reached an agreement on the investment to select in each phase.
- c) In the task we had to write "verbs which represent activities to be performed in a Childcare center" what mattered was the originality of the activities.
- d) I have children, brothers or sisters who currently attend day care or are in early childhood education.
- e) I have done practices or worked in a nursery or kindergarten school.
- f) In each phase of the activity the members of my team have discussed only about the nursery's project
- g) I have had a good time during the time I have spent discussing the information with my colleagues
- h) In the task we had to write "verbs which represent activities to be performed in a Childcare center" what mattered was my result not that of my teammates.
- i) While I have been taking parting the activity, I have felt that my two colleagues and I made a team.
- j) During the discussion with the members of my team we all have talked and participated.
- k) In my team, there was a member who acted as a leader.

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- l) I haven't changed my first opinion during the discussion with the other members of my team.
- m) During the discussion, I have tried to convince more than learn from other opinions.

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## **CHAPTER 4: STUDY II**

**The effect of Interactive Control Systems and Social Identity on team members' motivation and performance**

## **CHAPTER 5: STUDY III**

# **The effect of Group Performance Report on cooperative effort**

### **5.1. Introduction**

### **5.2. Hypotheses development**

### **5.3. Experiment design**

### **5.4. Results**

### **5.5. Discussion and Conclusions**

### **Appendix**

### **References**

## **5.1INTRODUCTION**

Team-based incentives motivate team members to increase individual effort in collaborative environments (Libby & Thorne, 2009; Román, 2009; Towry, 2003). However, these team-based incentives can also result in free-riding behavior (Bandiera, Barankay & Rasul, 2005; Rowe, 2004; Román, 2009). If team members observe free-riding, they can usually choose two options: team members can free-ride and cooperation may fail, or team members can try to influence free-riders to adapt their behaviour to the social norm of cooperation (Kocher & Sutter, 2007; van Dick et al., 2009a). Researchers often examine the type of control and incentive mechanisms that are used to reduce free-riding behaviour. Yet, economic incentives and control mechanism are not the only solution to the problem. Evidence indicates that individuals also respond to psychological and social principles (Birnberg, Luft & Shields, 2007; Sprinkle, 2003; Rowe, 2004). Individual and contextual features influence psychological and social motives within teams (Bonner & Sprinkle, 2002;

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Christensen et al., 2004; Rowe, 2004; van Dick et al., 2009b). Social identity is an individual feature which can influence how individuals behave working in teams (see Haslam, 2001). Further, accounting information can act as a contextual factor influencing team members' behaviour (Birnberg et al., 2007; Rowe, 2004). Group feedback has been highlighted as an antecedent of individual motivation within teams. Nevertheless, the effects on free-riding behaviour of subtle variations in the way performance feedback is presented in team-based settings have not deserved much attention (Coletti, Sedatole & Towry, 2005; Román, 2009). I design an experiment to analyze subtle changes in performance reporting, and suggest that design of these reports can be crucial in settings where teams develop a high social identity.

One crucial factor to stimulate effort and to avoid free riding behaviors is to make the team meaningful to the individual team member. To achieve this, one should stimulate individual self-determined motivation instead of external motivation which traditionally has been related to incentives and controls (Christensen et al., 2004; Gagné & Deci, 2005; Kocher & Sutter, 2007; van Dick et al., 2009b). Both social identity and accounting practices can be helpful in this respect (Adler & Chen, 2011; Haslam, 2001; Rowe, 2004; van Dick et al., 2009a). Social identity affects the individual's perception that he or she belongs to a social group (Tajfel & Turner, 1986). In teams with a strong social identity, team members perceive group values and group goals as more important than their personal goals, which may reduce free-riding behaviors (Haslam, 2001; Towry, 2003; van Knippenberg, 2000). Organizations, however, can also use contextual factors to make the team concept more meaningful to individual team members (Christensen et al., 2004; Rowe, Birnberg & Shields, 2008; van Dick et al., 2009b). Recent accounting researchers show the importance of accounting information as a contextual factor to influence team members' cognition and behavior (Birnberg et al., 2007; Rowe, 2004; Rowe et al., 2008). Researchers have stressed the importance of performance reports to increase individual motivation and effort (see Coletti et al., 2005; Román, 2009). However, few studies have analyzed the causal link between the informational feature of performance reports and team members' motivation to cooperate (Drake, Wong & Salter, 2007; Román, 2009).

This chapter analyzes two types of performance reports in a setting where team-based incentives are present. Both reports provide information about total team performance

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containing summary information, related to inputs, outcomes or/and outputs of the group and allow team members to assess free-riding. However, the information is either provided in an aggregated form (only the group-level information) or in a detailed form (group information plus information of each team member input to the group) (Chenhall & Morris, 1986; Bouwens & Abernethy, 2000). Differences are thus in the level of detail of the feedback provided to team members. Although the detailed performance report can generate some positive effects within the team (e.g., it allows team members to compare their own inputs with that of their members, which may increase the social comparison process), a detailed form can also produce negative effects. Combining both individual and group information may confuse team members, because they receive signals of both individual and group behaviour. In this situation, the social comparison process may reinforce free-riding behaviour (Festinger, 1954; Molleman, Nauta & Buunk, 2007; Rowe, 2004). Contrary to this, performance reports in an aggregated format at least send a clear message reinforcing the group context, because the individual information is left out. This study shows how a performance report in an aggregated form can increase team members' effort and reduce free-riding behaviours, in particular in teams with a strong social identity.

The experiment uses a traditional social dilemma of experimental economics. I adapt the task of Coletti et al. (2005) to a three-person team, where an incentive to free ride is constant across periods. During 30 periods, participants decide how much of resources to devote to a joint project (with other two team members). The first manipulated factor is social identity, varying the salience of team identity within teams as either strong or weak. The second factor is the design of the performance report in which I manipulate the information report as either displaying aggregated feedback or detailed feedback. Further, I measure social comparison process within teams with an exit-questionnaire, following the method of Molleman et al. (2007). The primary dependent variable is the level of individual effort within the team. The results show that social identity and performance reports influence team members' motivation and behaviour. Moreover, results show these individual and contextual features interact within teams. Social identity affects how individuals interpret performance reports. In settings with high social identity it is better to opt for aggregated feedback because represents a standard norm of cooperation within the group. Contrary, providing feedback in the detailed form induces more free-riding

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behaviors. In teams where social identity is low, differences between the two types of reports do not matter. The results also show that, only groups with high social identity and aggregated form of group feedback maintain high levels of effort across all periods.

This chapter contributes to the literature in several ways. First, it provides answers to calls for adopting a “behavioural-economics” approach (Birnberg et al., 2007; Sprinkle, 2003). I vary the type of feedback such that, economically speaking, team members can always assess the level of teammate’s effort (or free-riding). The results point out that the subtle variation in level of detail of performance reports may interact with a cognitive individual feature, such as social identity. In some situations, this interaction can have negative consequences for team members’ behaviour. Managers should thus carefully present information to team members, because too detailed information can increase free-riding behaviour. Secondly, the present study extends previous research focused on the role of ex-ante accounting information in a single period setting (see Rowe, 2004). I analyse the effect of ex-post information in a multi period setting, since managerial decisions are in nature multi-period (Sprinkle, 2003). In this context, aggregated information can help to avoid free-riding behaviors. Finally, this chapter provides evidence of how performance reports influence social comparison processes within teams (Towry, 2003, p.1089). Researchers stress that more empirical research is needed about how organizational factors influence social comparison processes (Goodman & Haisley, 2007, p.110; Spence et al., 2011). The detailed performance report increases social comparison within teams. However, team members may compare themselves with low-performers, to follow the self-interested norm of free-riding. This negative effect depends on the context and the social identity of the team. The results show that social comparisons within teams can sometimes be destructive for individual motivation and effort (Molleman et al., 2007). Hence, the way of designing performance reports within teams may have strong consequence on the social norms that may arise in teams and, in the end, the corporate culture that might arise on the work floor.

The remainder of this chapter is organized as follows. Section 5.2 I reviews the literature and develop the hypotheses related to the design of performance report, social identity and team performance. Section 5.3 I describes the design of the

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experiment. Section 5.4 contains the results of the experiment. Finally, this chapter is concluded with section 5.5 which contains a discussion of the findings.

## **5.2 HYPOTHESES DEVELOPMENT**

There are opposite lines of argument related to the free-rider problem along periods in the accounting literature (Brown, Evans & Moser, 2009; Libby & Thorne, 2009; Rowe, 2004; Román, 2009). On one hand, researchers point out that self-interested behavior precludes cooperation when group rationality is in contradiction with individual rationality. In this situation, the individual prioritizes his/her individual goals versus the group goals (Gold & Sudgen, 2007). On the other hand, researchers point out that this free-riding behavior can be allowed if group goals are really meaningful for each team member. In this situation the individual thinks he is working for “us” and not for “me”, therefore, individuals “want” to (instead of “have” to) work for achieving team goals (Adler & Chen, 2011; Gagné & Deci, 2005). Two mechanisms can be used for this purpose. First, the situation may activate the social identity of team members (Haslam, 2001; van Dick et al., 2009b). Secondly, contextual factors, as accounting information, may reinforce the group frame versus the individual frame (Bandiera et al., 2005; Bonner & Sprinkle, 2002; Gold & Sudgen, 2007; Karau & Williams, 1993; Rowe, 2004).

### **5.2.1 Social identity and team members' effort**

Social identity is an individual feature which describes a psychological process that occurs when a person self-identifies as a social member (Tajfel & Turner, 1986; Haslam, 2001). People tend to classify themselves and others into various social categories, such as organizational membership, religious, gender or team (Ahsforth & Mael, 1989). Psychology researchers point out that what functions as a motivating factor depends on “who you are” in any given context: someone who is going it alone, or someone who is part of a social category (Haslam, 2001). Nevertheless, it is necessary that this identification with a social category has some emotional significance attached to the membership. For example, van Dick et al. (2009a) did not



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find a relation between social identification and team members' effort. It seems that the reason was that the group category in this study was less relevant to memberships than other social categories. Two processes are needed to influence individual behavior through social identity perspective (O'Fallon & Butterfield, 2012). First, individuals need to classify into a group. This categorization allows individuals to define themselves with regard to the social environment. Secondly, depersonalization is also needed. It occurs when the individual begins to act and think in accordance with the group's perceived prototypical characteristics, such as norms, values and beliefs. If an individual feels is a part of a team and feels a positive emotion and value related to this team, thus, the team, psychologically, turns into a part of the self (Chidambaran & Tung, 2005; van Dick et al., 2009b; Van Knippenberg, 2000).

Following this reasoning I propose social identity can reduce free-riding behaviours' within teams across periods (Towry, 2003). Free-riding problem occurs because team members prioritize individuals' goals instead of group goals, but, social identity can change this priority. Social identity moves an individual away from "feeling and thinking like a distinct individual, to feeling and thinking like a representative of a social group or team" (Lembke & Wilson, 1998; O'Fallon & Butterfield, 2012). If the individual identifies with the group, thus, group goals are the important value. The individual will be willing to exert more effort to achieve these goals, allowing the self-interested behavior. Following this reasoning, the first hypothesis is formulated:

Hypothesis 1: Social identity increases team members' effort.

### **5.2.2 Performance report and team members' effort**

The manner in which accounting information is presented influences individual behavior within organizations (i.e. budgets, accounting reports or cost reports) (Bonner & Sprinkle, 2002; Cardinaels, 2008; Nikias et al., 2010; Rowe, 2004). Performance feedback is one of the key aspects to influence individual behaviors (Drake et al., 2007; Román, 2009). Although researchers have analyzed the relation between feedback and individual motivation, their results may not be generalized to situations where employees are given feedback related to a group rather than their own

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individual performance. Feedback regarding teammate's performance enables social comparison process which is not present where only individual feedback is offered (Drake et al., 2007; Goodman & Haisley, 2007).

Coletti et al. (2005) and Román (2009) shed some light related to feedback in team settings. In the study by Coletti et al. (2005) teammates share group information and individual information of each team member. In the study by Román (2009), teammates share only group information. In both studies, the authors point out these performance reports increase individual effort within teams, that is, increase cooperation. However, the two studies compare situations where performance reports are used with situations where performance reports are not present. These results stress the importance of the control feature of feedback, nonetheless, there is other important feature related to information that can also influence individuals' motivation (Deci, 1975; Drake et al., 2007). The informational feature of a group feedback can influence individual behavior through three processes: information related to individual competence (this process also occurs when the report is individual) (Drake et al., 2007); social comparison process (individuals can compare with teammates) (Festinger, 1954; Molleman et al., 2007); and a cognitive process (the individual receives information related to the context where he is working) (Rowe, 2004; Rowe et al., 2008). I analyze ways of presenting group-performance information within the team: a detailed and an aggregated form. When the detailed form is used, teammates share group-level information but also their own individual information (see Coletti et al., 2005). Contrary, with an aggregated form team members only share group-level information (see Román, 2009). Although the two ways of presenting information may influence individual behavior within teams, I propose that only one of them, the aggregated form, can help to avoid free-riding behaviors along periods. The reason is the social comparison and cognition processes enhanced by the detailed form should produce negative effects within teams (Molleman et al., 2007; Rowe, 2004).

Social comparison process describes a human tendency to evaluate his opinions and abilities against similar others (Festinger, 1954). It has been identified three specific motives for comparison: self-evaluation (how am I doing?), self-improvement (the desire to improve about their abilities) and self-enhancement (the desire to protect/enhance one's attitude towards the self). Researchers have found social

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comparison is a multi-dimensional concept (Buunk et al., 2003, 2005; Molleman et al., 2007). First, individuals engage in both upward (compare with others performing better) and downward comparisons (compare with others performing worse). Secondly, these comparisons can produce two types of effects: contrast (“that person is not me”) and assimilation (“that person could be me”) (Buunk et al., 2005; Buunk & Gibbons, 2007; Gibbons & Buunk, 1999; Goodman & Haisley, 2007). I want to point out that not only social comparison process is enhanced by the detailed form, but also by the aggregated form of feedback. However, social comparison process is different across the two types of group feedback. The reason is social comparison is influenced by the type of context, particularly when working in teams. The main difference is if team members are working in a competitive or cooperative environment (Brown et al., 2007; Goodman & Haisley, 2007; Spence et al., 2011). And the manner in which accounting information is presented can frame or reframe context within teams (Rowe, 2004; Rowe et al., 2008). I propose that each type of group feedback (detailed vs. aggregated) influences different dimensions of social comparison processes, because influences in a different way the cognitive process of team members (Molleman et al., 2007; Spence et al., 2011).

On one hand, when a detailed form of group feedback is used within the team, the individual receives mixed signals related to the context where he is working (individual and group information are present). Researchers highlight the individual frame dominates the group frame when mixed signals are present (Haslam, 2004; Rowe, 2004, p. 1159). If the individual frame dominates, thus, self-interested behaviour is enhanced, and the individual interprets the context as competitive (Buunk et al., 1990; Rowe, 2004). When competition is presented, the individual used the social comparison process to self-enhance his own interests and benefits. Therefore, the individual compares with low-performers (or free-riders), that is, the individual develops a downward comparison with his/her teammates. If the individuals perceive others are receiving desired benefits (e.g. higher pay) with less effort, hence, the individual is going to follow the free-riders to feel better (to self-enhance). In summary, the individual develops a downward assimilation comparison along periods, which influences his behaviour, that is, which decreases his levels of effort (Brown et al., 2007; O’Fallon & Butterfield, 2012; Spence et al., 2011).

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On the other hand, the aggregated form reminds the group frame because only group-level information is shared (Rowe, 2004). A group frame reminds a non-competitive context, and in this context, comparison is used to self-improve. In this situation, an upward comparison (with high performers) may produce positive emotions, because the individual wants to self-improve, thus, want to be as his “high” performers (upward assimilation effect) (Buunk et al., 1990; Román, 2009). I expect in this situation team members avoid the downward comparison, and develop upward comparison with teammates (Buunk et al., 2005). Román (2009, p.594) points out aggregated performance information is given to team members for stimulating effort and controlling the free-rider problem among teams. In summary, I expect team members who receive an aggregated form of group feedback develop upward assimilation comparison process and follow the social norm of cooperation (Rowe, 2004; Rowe et al., 2008; Solomon & McLaren, 2008). Contrary, I expect team members who receive a detailed form of group feedback develop downward assimilation comparison process and follow free-riding behaviours’ along periods. Therefore, the following hypothesis is formulated:

Hypothesis 2: The design of group performance reports increases team members’ effort, mediated through team members’ social comparison process.

### **5.2.3 The interaction between social identity and performance report**

Researchers suggest feedback influences team members’ behavior to the extent that people have adopted the relevant group identity (O’Fallon & Butterfield, 2012; Towry, 2003). The reason is social identity affects how information is interpreted within teams because this information sends signals related to the typical group behavior (Christensen et al., 2004; Haslam, 2001; O’Fallon & Butterfield, 2012; Towry, 2003).

Individuals who identify with a social category want to maximize similarities within the group and differences between groups. One manner of maximizing similarities is follow the social norm or behavioral standard of the group (Haslam, 2001; Towry, 2003). Feedback regarding teammate’s performance is a descriptive norm, that is, a

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norm which presents what most teammates do regardless of its appropriateness. Thus, I propose in this study that in high social identity teams, the design of group feedback sends a message to team members related to the social norm of the group (Christensen et al., 2004; O'Fallon & Butterfield, 2012). However, the social norm is different across the two types of group performance report.

On one hand, a detailed form of group feedback facilitates information about free-riding behavior of teammates. In contexts where free-riders behavior is frequent and widespread, teammates provide normative support for unethical behavior. Where unethical behavior is common, this evaluation leads individuals to conclude that this behavior fits the group prototype, which increases the likelihood of free-rider behaviors (O'Fallon & Butterfield, 2012; Towry, 2003). In that sense, I follow the results of Towry (2003, p.1083) where high social identity teams report less ethical than low social identity teams. The reason is high social identity groups are more likely to coordinate their strategies, unless involves unethical behaviors. Moreover, the results of Towry (2003, p. 1084) suggested that high social identity groups were less likely to punish shirking behaviors, than low social identity groups. One possible explanation is teammates assume that free-riding behaviors are the standard behavior of the group, when the group identity is high (Bonner & Sprinkle, 2002; Christensen et al., 2004). On the other hand, the aggregated form of group feedback avoids the individual information related to free-riders behaviors. Further, sharing group information should be interpreted as a cognitive bias (Haslam, 2001). Finding out and sharing publicly what "we" have in common is essential to reinforce group identity. This group information is used as a behavioral standard within the group (van Knippenberg, 2000). If the group category is the important identity, the individual follow the cooperative group norm (van Dick et al., 2009b). Following this reasoning, I expect a moderating effect of social identity on the relation between the design of performance report and individual effort:

Hypothesis 3: The higher the social identity of the team, the greater the effect of the design of group performance reports on team members' effort.

### **5.3 EXPERIMENT DESIGN**

I design a 2 x 2 experiment, with two independent variables: the design of team-based performance reports either in aggregated form or detailed form, and the level of social identity manipulated as either high or low. I use a between-subject design in which each individual is exposed to only one treatment or condition (Charness, Gneezy & Kuhn, 2012). The experiment was programmed using z-Tree software (Fischbacher, 2007). I adapt the study of Coletti et al. (2005) (which analysed collaboration between two people) to a three-person team. The task represents a group decision task during 30 periods.

Participants assumed the role of a research and development (R&D) manager at a pharmaceutical company. Three participants (three R&D managers) formed a team within the same company. The company asked the three R&D managers to work together in a R&D project to develop a new product. For each period, each R&D manager had to decide how much of his division R&D resources to devote to the joint R&D project. There were only two choices: a high or a low level of resources. The joint income of the R&D project increased with the level of resources invested by the three R&D managers. However, each participant incurred a cost of 15 points if s/he decided to invest a high level of resources. The cost was zero if the participant chose a low level of resources. This cost provided an incentive for free-riding behaviours, that is, to devote only a low level of resources to the joint project, because the three participants equally shared the income from the joint project. Participants made their decision for 30 separate periods. Communication among participants was completely restricted. I summarize in Exhibit 5.1 and 5.2 the experimental parameters:

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#### Exhibit 5.1.(10): Payoff structure

- If participants choose to invest high resources, their division is charged 15 points (cost). If they choose low resources, their division is charged 0 points.
- Joint project income is shared equal by the three team members (1/3).
- Joint project income increases with the level of resources dedicated to the joint project:
  - ✓ If three divisions choose low, joint project income= 15 points (therefore, the individual income is 5 points).
  - ✓ If three divisions choose high, joint project income= 75 points (therefore, the individual income is 25 points).
  - ✓ If any other situation (one chooses high, two choose low; two choose high, one chooses low), joint project income= 45 points (therefore, the individual income is 15 points).

#### Exhibit 5.2.(11): Strategic form for three-player game

		Player 3: High		Player 3: Low	
		Player 2		Player 2	
		High	Low	High	Low
Player 1	High*	10, 10, 10**	0, 15, 0	0, 0, 15	0, 15, 15
	Low*	15, 0, 0	15, 15, 0	15, 0, 15	5, 5, 5

Source: own elaboration

\*Represents the level of resources dedicated to the joint project (high or low).

\*\* Represents the payoff (points) to Player 1, Player 2 and Player 3, respectively.

Exhibit 5.2 represents a prisoner's dilemma situation which is created by the design of the group incentive within the team (Towry, 2003). The dilemma is that group performance is higher and everyone may benefit if all players chose high levels of resources (cell 10, 10, 10). However, at the margin each player is strictly better off free-riding that is, choosing low levels of resources (cell 5, 5, 5) (Rowe, 2004). Therefore, in this situation, the unique Nash Equilibrium is for each player to devote low level of resources to the joint project (cell 5, 5, 5), because the option of low level of resources strictly dominates the option of high level of resources. Yet the three players would be better off if each one chose high level of resources (cell 10, 10, 10). This last option is namely the cooperative equilibrium (Gold & Sudgen, 2007). Exhibit 5.2 presents a prisoner's dilemma situation for one period decision. Nevertheless, the Nash Equilibrium is the unique solution also in multi-period decisions, when individuals know the number of times they will play the game (Gold & Sudgen, 2007).

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**5.3.1 Manipulation and measures**

The design of the experiment included two independent variables (performance report and social identity), one dependent variable (individual effort), and one mediating variable (social comparison). I manipulated the independent variable of group performance report manipulating the manner in which accounting information was presented within the team either in an aggregated form or in a detailed form<sup>28</sup>. In the aggregated condition, after each period, team members received feedback about the joint project income of the group<sup>29</sup>. In the detailed condition, after each period team members received information related to the joint project income, and also related to profits and contributions of each team member<sup>30</sup>. Note that the information in both aggregated and detailed conditions allows participants to assess if other people free ride in their team, given that the total project income is provided in both types of reports and that each individual knows what effort he or she has delivered to the team. The detailed performance feedback simply makes the fact that some people provide low effort to the team more salient, because individual inputs are displayed to all team members. This design allows to focus on behavioural consequences of information provision, as economically speaking both performance feedback conditions should not matter, because the group incentive system is constant across conditions.

I manipulated the independent variable of social identity combining two procedures that increase group salience, and have been used in previous works: color T-shirts and competition between groups. Social identity researchers point out that salience describes the relevance of a social category for the individual in a given moment. And this salience influences the level of social identity when the situation matches with the expectations of the individual (van Knippenberg, van Dick et al., 2009a). First, participants who work for the same company were wearing the same color T-shirt to increase their level of social identity (as workers of the same company). At least two groups of students which represented two different companies participated in the same session. The presence of two color groups promoted self-categorization. That is,

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<sup>28</sup>Group performance information was only available within the team. Hence, no team had access to the performance information of other teams

<sup>29</sup>For example, if the three participants chose high level of resources, they were informed that the joint project income was 75 points.

<sup>30</sup>For example, if the three participants chose high level of resources, they were informed that the joint project income was 75 points, and also that the participant A (also B and C) chose high level of resources, the cost of his Division was 15 points and the profit of his Division was 10 points ( $75/3 - 15$ ).



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participants were able to easily identify the company for which they worked and social identity may be clarified by this in-group/out-group comparison<sup>31</sup>. Secondly, meaning of the in-group could be increased by having an out-group present with which the group could compete (Haslam, 2001; van Dick et al., 2009b). Participants in the high social identity condition were informed that the companies they represented were competing for market share, and that the new R&D project was very important for increasing that market share. Nevertheless, this competition did not change the group incentive across conditions. In summary, teams in high social identity condition used color T-shirts to self-identify and also were informed that their companies were competing. Contrary, participants in low social identity condition wore their own clothes (therefore, with different colors) and they were not informed about a competition between companies they represented.

The mediating variable, social comparison was measured with a questionnaire at the end of the activity (5-point scale) (following the work by Molleman et al., 2007). These authors measured four types of social comparison-based thoughts referred to teammates: upward assimilation, upward contrast, downward assimilation and downward contrast. For example, I measured upward comparison with the following sentence: “There must have been situations in which you experienced someone performing higher (investing higher) than you in your team. In such a situation, how often do you think...?” Following this introduction there were two items on assimilation thoughts: “I will do that as well” and “That’s the way I will do it, too”. And there were two items on contrasting thoughts: “I will never invest like that” and “I will not attain that”<sup>32</sup>. The validity of the four types of social comparison-based thoughts has been supported by a series of studies (Buunk et al., 2003, 2005). These studies have demonstrated that the consequences of social comparison depend not only on its upward or downward direction, but also on its contrasting (“that person is not me”) or assimilation nature (“that person could be me”), which support the idea of distinguishing the four types of thoughts resulting from social comparison.

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<sup>31</sup>I used at least 12 participants in each session for the high social identity condition, because I need maintain the anonymity feature. For example, in one session with 12 participants, I made two groups of 6 participants (each group represented a pharmaceutical company), and I used two color t-shirts for each company. After participants put on their color t-shirts, I randomly assigned participants of the same color company to a three-person team. Within a team they knew that they belonged the same company, but did not know exactly with whom of the other five members they were paired to form the three-person group.

<sup>32</sup>Social comparison questionnaire available in Appendix 5.1.

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Furthermore, these studies have been conducted in different countries among different groups of respondents, demonstrating external validity of these concepts as well.

Finally, the dependent variable was individual effort represented by the level of resources chosen. In prisoner's dilemma situations the players' level of effort is represented by the decision of to cooperate or to defect (see Gold & Sudgen, 2007). Accounting researchers have adapted this strategy game to situations developed within organizations. The level of individual effort is represented by the level of resources invested by managers in the group project (low resources are as "to defect", high resources are as "to cooperate") (see Coletti et al., 2005; Rowe, 2004; Towry, 2003). I analyze a motivational problem which produces free-riding behaviors within teams. Thus, I am interested on individual behaviors within teams. The dependent variable was measured with the cumulative number of times an individual in the team choose to dedicate high resources to the joint project in the 30 periods (Coletti et al., 2005).

#### **5.3.2 Participants and procedure**

The participants were 144 graduate students from Pablo Olavide University at Seville. The 48% of the subjects were male. Participants had a mean average age of 24. I formed 48 teams of three participants. Participation in the experiment took about 45 minutes on average. I run eight sessions between April and October 2012. Participants were randomly assigned to a three-person team. The task was performed via computers and participants' didn't know the identity of the person with whom s/he was paired. However, participants knew that they were paired with the same two participants during the 30 periods.

When participants entered into the room, an experimental instructor gave them a document with instructions. He or she explained that participants would be randomly assigned to a three-person team through a computer. After reading this information for five minutes, participants went into a second room and took place behind a separate and individual cubicle, where each of them responded to the decision task (i.e. deciding among effort choices) and to the post-questionnaire questions that followed after the task. Participants were informed that they would receive a real incentive

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depending on the level of profit of their Department at the end of the task (1 euro for every 50 points of profit earned). They could receive between 0 and 9 euros for his participation. Average total payoffs for all subjects was 4,76 euros. At the end of the task, participants had to respond in their computers other questionnaires for controlling that participants had a good understanding of the procedures and the manipulation of the variables were successful<sup>33</sup>.

The support material used in the experiment is shown in a specific Appendix, at the end of the dissertation<sup>34</sup>. Two types of documents are presented: the instructions given to students related to the incentive system and the performance reporting used at group level, and also the screens of Z-tree software that students saw while participating on the experiment.

## 5.4 RESULTS

Table 5.3 presents the descriptive statistics of the four conditions. The dependent variable is individual effort. For a given period, this variable could equal 0 (low effort, that is, low resources) or 1 (high effort, that is, high resources). The cumulative variable for all 30 periods ranges from 0 to 30. I analyze three more dependent variables: individual effort in early stage (periods 1 and 10), middle stage (periods 11 and 20) and late stage (periods 21 and 30). These three variables can range from 0 to 10. These last three variables allow to analyze behavioral across stages or periods (Bloomfield and Luft, 2008). I asked manipulation check questions to ensure participants understood the scenarios. Manipulation check was satisfactory.<sup>35</sup>

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<sup>33</sup> Manipulation check questionnaire is available in Appendix 5.2.

<sup>34</sup> See Appendix: Support material for experimental studies.

<sup>35</sup> Manipulation was checked with ANOVA analysis across conditions.

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**Table 5.3.(12): Descriptive statistics (4 conditions, N:144)**

	Aggregated Performance Report (N: 60)			Detailed Performance Report (N: 84)		
		Mean	S.E.		Mean	S.E.
Low social identity (N: 72)	Individual effort	17.67	8.99	Individual effort	15.21	8.55
	Early individual effort	6.40	2.69	Early individual effort	6.88	2.87
	Middle individual effort	5.87	3.30	Middle individual effort	4.90	3.39
	Late individual effort	5.40	3.50	Late individual effort	3.43	3.47
	(N = 30)			(N = 42)		
High social identity (N: 72)	Individual effort	25.53	4.77	Individual effort	19.40	8.44
	Early individual effort	8.70	1.78	Early individual effort	6.93	2.38
	Middle individual effort	8.60	1.96	Middle individual effort	7.14	3.17
	Late individual effort	8.40	2.03	Late individual effort	5.33	3.69
	(N = 30)			(N = 42)		

Source: own elaboration

Table 5.4 presents the results of the full model with ANOVA analyses. Hypothesis 1 predicts that individual effort is higher in high social identity teams than in low social identity teams. Results in Panel A (Table 5.4) support this hypothesis ( $F= 20.511$ ;  $p<0.000$ ). Hypothesis 2 predicts that the design of group performance report increases individual effort. I expect team members with an aggregated form develop higher levels of individual effort than teams members with a detailed form. Results in Panel A (Table 5.4) support this hypothesis ( $F= 10.504$ ;  $p<0.001$ ).

Hypothesis 3 predicts that social identity moderates the effect of performance report on individual effort. A moderator is a qualitative or quantitative variable (social identity) that affects the direction and/or the strength of the relation between the independent variable (design of performance report) and the dependent variable (individual effort) (Baron & Kenny, 1986). Results in Panel B (Table 5.4) support this hypothesis. In groups with low social identity the design of performance report does not influence individual effort ( $F= 1.379$ ;  $p<0.244$ ). Contrary, in groups with high social identity, the design of group performance report influences individual effort ( $F= 13.559$ ;  $p<0.000$ ). Thus, social identity affects how information is interpreted within teams (Towry, 2003). It seems that the design of performance report plays a major role in influencing individual behavior when team members' are high identified with teammates.

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**Table 5.4.(13): Hypotheses test – Full model - ANOVA on individual effort<sup>36</sup>**

**Panel A: Main effects. Between subjects**

<b>Factor</b>	<b>Dof</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Social identity	1	435.813	20.511	<0.000
Design of group Perform. report	1	223.186	10.504	<0.001
Social identity x Design of group Performance report	1	43.072	2.027	<0.157

**Panel B: Simple effects for each Social identity condition. Between subjects**

	<b>Dof</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Effect of group Perform. report under low social identity groups	1	35.083	1.379	<0.244
Effect of group Perform. report under high social identity groups	1	231.175	13.559	<0.000

**Panel C: Main effects. Within subjects**

<b>Factor</b>	<b>Dof</b>	<b>Mean square</b>	<b>F</b>	<b>p-value</b>
Stages	1.739	103.393	34.138	<0.000
Stages x Social identity	1.739	22.519	7.435	<0.001
Stages x Design of group Performance report	1.739	37.194	12.281	<0.000
Stages x Social identity x Design of group Performance report	1.739	8.027	2.650	<0.080

Source: own elaboration

Hypothesis 2 also predicts that social comparison process mediates the relation between performance report and team members' effort. I measured four types of social comparison processes (the mediating variable). Each type of comparison was measured with two items (see Appendix 5.1.).

The mediating relation of hypothesis 2 was tested using the partial least squares (PLS) technique (Chin, 1998; Wold, 1982). PLS is a variance-based approach for the estimation of path models involving latent constructs that are indirectly measured with

<sup>36</sup>Analyses at group level (group effort) produce qualitative similar results for the three hypotheses. In particular performance reports have significant effects on group effort in high social identity condition (F: 6.909; p<0.015). In low social identity condition I do not find a difference (F: 0.791; p<0.383).

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multiple indicators. PLS can estimate models with small sample sizes and does not make distributional assumptions about the data used for modelling (Chin, 1998). The mediating model analyses individual behaviour, that is, how the individual compares with teammates and how this comparison (mediating variable) influences individual effort (dependent variable). I used the eight items of social comparison questionnaire, as indicators of the latent mediating variables (upward assimilation, upward contrast, downward assimilation, and downward contrast)<sup>37</sup>. The independent variable, performance report, is a dummy variable (0, aggregated performance report; 1, detailed performance report).

Related to the structural model, Figure 5.1 displays the results from the test of the full model. Table 5.5 contains the detailed output statistics of the analysis of path coefficients in the structural model, and reports on the significance of the standardized  $\beta$ s that resulted from this analysis, based on a bootstrapping procedure that used 500 samples with replacement. Table 5.5 also reports the  $R^2$  statistics for the dependent variable (individual effort) and the mediating variables (social comparison processes).

**Table 5.5.(14): Results from PLS analysis: full model (path coefficients, N: 144)**

To	From	Design of perform. Report	Upward assimilation	Upward contrast	Downward assimilation	Downward contrast	$R^2$ statistics
Upward assimilation		0,027					0,001
Upward contrast		-0,002					0,000
Downward assimilation		0,203 <sup>c</sup>					0,038
Downward contrast		0,041					0,002
Individual effort		-0,216 <sup>b</sup>	0,043	-0,266 <sup>b</sup>	-0,392 <sup>a</sup>	0,117	0,353

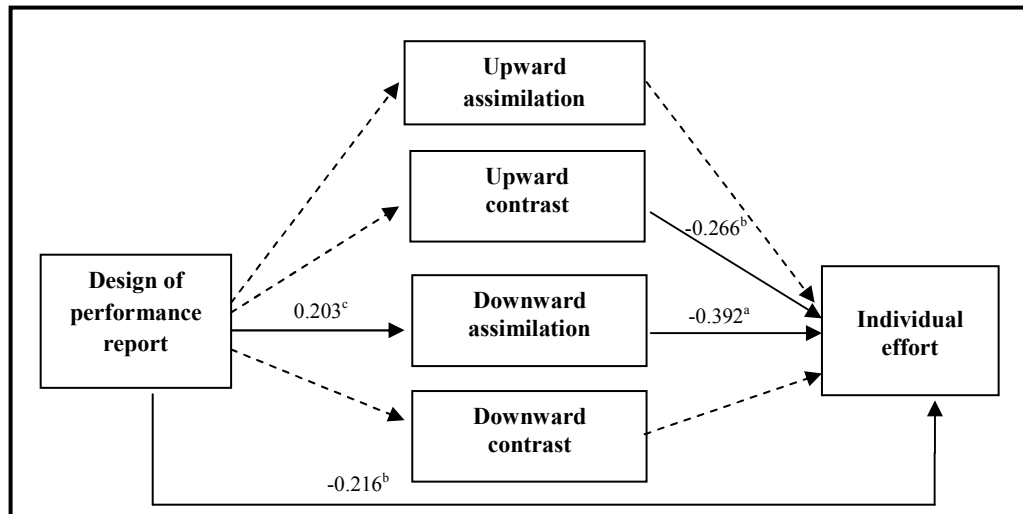
<sup>a</sup>Significant at 0.001 level, <sup>b</sup>Significant at 0.01 level, <sup>c</sup>Significant at 0.05 level  
Source: own elaboration

<sup>37</sup>I made a factorial analysis for analyzing if the measures were reliable: Cronbach Alpha for the two items of upward assimilation is 0,806; for upward contrast is 0,738; for downward assimilation is 0,749; and for downward contrast is 0,788. The results are in line with recent social comparison studies who point out that social comparison is a multi-dimensional variable (see Buunk et al., 2003, 2005; Molleman et al., 2007).

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**Figure 5.1.(8): The structural model (study III): performance report, social comparison and individual effort (N: 144)**



<sup>a</sup>Significant at 0.001 level, <sup>b</sup>Significant at 0.01 level, <sup>c</sup>Significant at 0.05 level ( $R^2$  0.394) (solid lines represent significant paths).

Source: own elaboration

These results point out that group performance report influences individual effort directly and also via social comparison process. As the design of performance report was measured as a dummy variable (0, aggregated performance report; 1, detailed performance report), the model suggests the detailed form decreases individual effort, comparing to the aggregated form. Two processes are enhanced with the informational feature of the performance report. First, a cognitive process influences individual motivation (represented by the direct effect). The detailed form reinforces the individual frame, thus, the individual develops more self-interested behaviour (Rowe, 2004). Contrary, the aggregated form reinforces the group frame, thus the individual increases his level of effort within the team. Secondly, a social comparison process also influences individual motivation (represented by the indirect effect). The detailed form increases the level of downward assimilation process (I compare with others performing worse, to follow them). That is, the individual compares with free-riders teammates, and decides to follow them, that is, decides to free-ride. The results are in line with Molleman et al. (2007). In this study results point out that downward assimilation inhibit team members' motivation. However, related to the upward comparison process, I do not find that an aggregated form enhances this upward process, as I expected. Nevertheless, in teams where the detailed form is used, I find that team members develop an upward contrast process, that is, they compare with

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high-performers but not to follow them, but to the contrary. This upward contrast comparison also reduces individuals' effort within the team.

Finally, hypothesis 3 predicts that social identity moderates the effect of performance report on individual effort, and results support this hypothesis (see Panel B, Table 5.4.). To give a strong support to this result I estimate again the mediating model (see figure 5.2. and Table 5.6) for high social identity teams using the partial least squares (PLS) technique (Chin, 1998; Wold, 1982). I want to compare regression coefficients between the general model (figure 5.1.) and the model of high social identity teams (figure 5.2.) (Baron & Kenny, 1986).

**Table 5.6.(15): Results from PLS analysis: full model for high social identity teams (path coefficients, N: 72)**

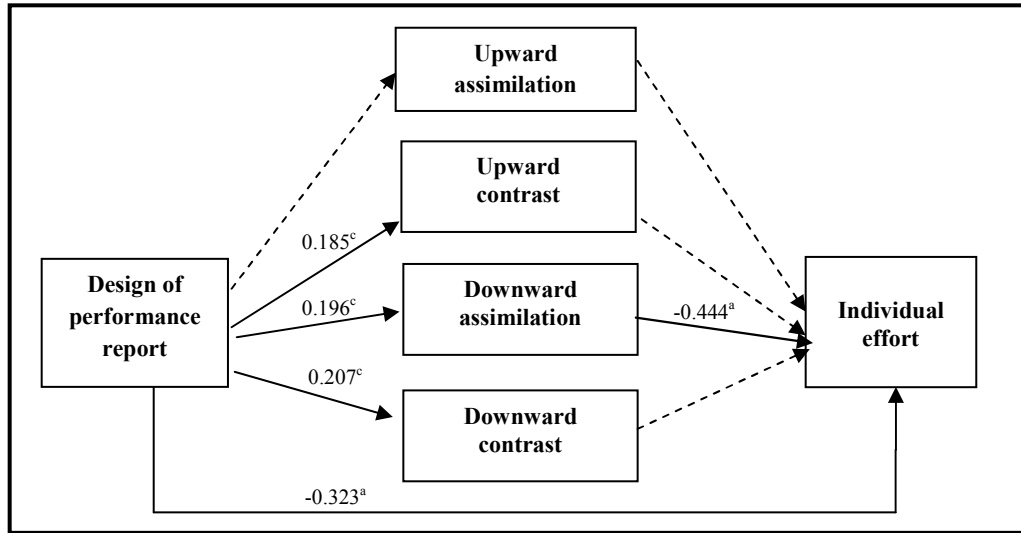
To	From	Design of perform. Report	Upward assimilation	Upward contrast	Downward assimilation	Downward contrast	R <sup>2</sup> statistics
Upward assimilation		0,059					0,003
Upward contrast		0,185 <sup>c</sup>					0,035
Downward assimilation		0,196 <sup>c</sup>					0,039
Downward contrast		0,207 <sup>c</sup>					0,040
Individual effort		-0,323 <sup>a</sup>	0,024	-0,133	-0,444 <sup>a</sup>	0,134	0,382

<sup>a</sup>Significant at 0.001 level, <sup>b</sup>Significant at 0.01 level, <sup>c</sup>Significant at 0.05 level  
Source: own elaboration



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**Figure 5.2.(9): The structural model for high social identity teams (study III): performance report, social comparison and individual effort (N: 72)**



<sup>a</sup>Significant at 0.001 level, <sup>b</sup>Significant at 0.01 level, <sup>c</sup>Significant at 0.05 level ( $R^2$  0.382) (solid lines represent significant paths).  
Source: own elaboration

Some differences can be finding if we compare Figures 5.1 and 5.2. First, the direct effect of the design of performance report on individual effort is strongest when social identity is high ( $t = -0,323$ ,  $p < 0,001$  for high social identity teams;  $t = -0,216$ ;  $p < 0,01$  for all sample). Secondly, the indirect effect via downward comparison process is also strongest when social identity is high (I compare  $0,196 \times -0,444 = -0,087$  for high social identity teams; with  $0,203 \times -0,392 = -0,078$  for all sample). Finally, in groups with high social identity the design of performance report also influences the contrast comparison processes (upward and downward), although these two processes do not influence individual behaviour. It seems that the detailed form of performance report, where the individual information is presented, enhances personal self-construal instead of the interdependent self-construal (which relies on the group). And contrast effects are more likely to occur when personal self-construal is presented (Greenberg et al., 2007).

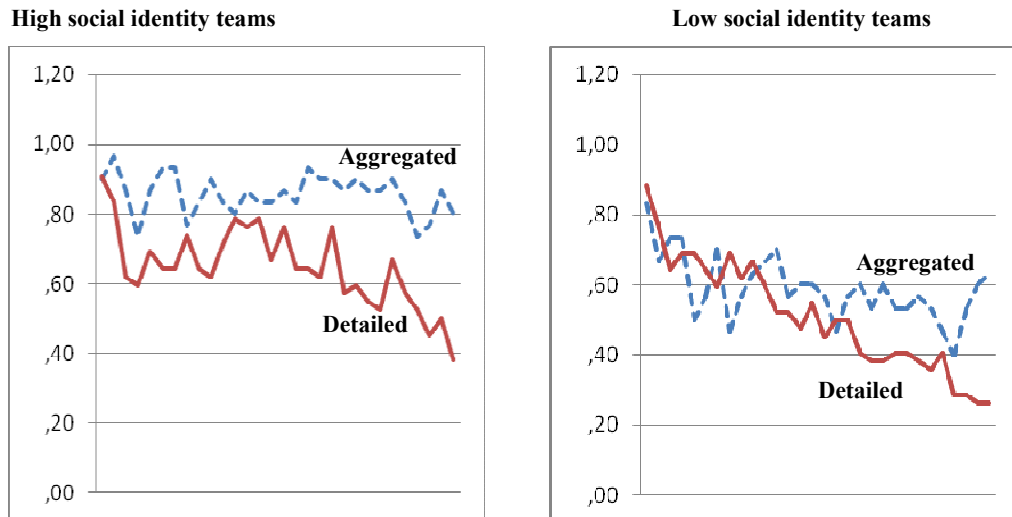
Figure 5.3 shows the trends in individual effort for teams with high and low social identity, where the independent variable is the performance report used. Only team

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members with high social identity and aggregated group performance report maintain levels of effort across periods<sup>38</sup>.

**Figure 5.3.(10): Trends in groups with high social identity vs groups with low social identity**



Source: own elaboration

## 5.5 DISCUSSION AND CONCLUSIONS

This chapter analyses the effects of the design of performance report and social identity on individual effort within teams and across periods. The results provide evidence that social identity increases individual effort. Further, the informational feature of group performance report can help to avoid free-riding behaviours across periods. Moreover, the results showed that the informational feature of feedback can influence individual behaviour within teams through two processes: a cognitive process (which allow stressing a group or individual frame) and a social comparison process (which allow teammates to compare and follow other teammate's behaviour). Finally, this chapter provides evidence that the effectiveness of the design of group performance report is enhanced by the level of social identity of the team. The results suggest that teams with high social identity can maintain high levels of individual

<sup>38</sup>Differences on individual effort in Early, Middle and Late individual effort are shown in Table 5.3 across conditions.

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effort across periods only when feedback aggregated is provided. In settings where team identity is lower, the type of performance reports matters less.

This chapter provides useful insights for both theory and practice. First, this chapter sheds some light related to the role of information in strengthening (or weakening) the links between control and cooperation within teams in multi-period settings (Coletti et al., 2005, p. 497). The present study shows that the informational feature of feedback can influence team members' behaviour in a positive or negative way. The manner in which team-based information is disseminated or presented influences individual motivation. A performance report in aggregated form frames a group context and can avoid future free-riding behaviors (Rowe, 2004; Rowe et al., 2008).

Secondly, the present chapter provides evidence that social identity is a main individual feature and affects how information is interpreted within groups. The work of Towry (2003) focused heavily on a control feature, and demonstrated that the effectiveness of an incentive system can be enhanced or degraded by a sense of team identity. The results show that the effectiveness of subtle changes in presentation format of performance reports (that economically speaking should have little effect on cooperation) may also be enhanced or degraded by a sense of team identity. I provide more evidence related to the importance of supplementing economic theories with social psychological theories to analyse and understand individual behaviour within teams (Birnberg et al., 2007). In teams with high social identity, the information of the group feedback becomes a behavioural standard, that is, team members think this is the standard behaviour that the group should follow. This study shows that the more individuals perceive that others are engaging in unethical activities (which should happen more when feedback is more detailed), the more they believe that unethical behavior is consistent with the norms, values and beliefs of their relevant social group (O'Fallon & Butterfield, 2012, p.126).

Finally, this chapter answers recent calls for analysing organizational factors which influences or can be influenced by social comparison processes (Goodman & Haisley, 2007; Spence et al., 2011). The more institutionalized and visible a mechanism is within the organization, the more they should stimulate social comparison processes (Goodman & Haisley, 2007). Providing team information may reinforce these social

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comparison processes within the team. Nevertheless, the results also point out that providing too much detail on team based performance could be negative for individual effort. Supplementing group information with individual information related to team members' performance can increase downward assimilation processes, increasing free-riders behaviour within the team. Contrary to my expectations, I don't find an aggregated form of performance report enhances an upward comparison process. One possible explanation is participants in the experimental task did not perceive they could control the situation where they worked. Social comparison researchers point out that not only a cooperative context is needed to develop an upward comparison process, but also individuals should feel they have the means to attain a higher level of performance (Buunk et al., 1990; Greenberg et al., 2007). In the experimental task, individual performance depends on other teammate's effort. However team members cannot communicate and cannot help each other to influence other team members' effort.

As any empirical study, this chapter presents several limitations. First, participants did not communicate face to face and simply chose effort choices. When communication is allowed, people who deliver more effort might stimulate others to deliver effort through this communication, which can moderate the results of this study. In that sense, I think the negative effect of the detailed form of feedback could change, if teammates feel they had more control over the situation to improve team-based performance (Greenberg et al., 2007; Román, 2009). Secondly, this study uses an experiment to analyze the effect of social comparison related to performance feedback. In real situations, workers can also compare other dimensions, as salary or working conditions (Brown et al., 2007) which either can complement or conflict with the type of feedback workers receive. Thirdly, this study demonstrates individuals interpret information in different ways, depending on their level of social identity, that is, depending on individual differences. However, other individual differences can also influence how team members interpret group information, as demographic differences or background (i.e. skills' job or skills' task) (Chandler, Honig & Wiklund, 2005; Naranjo-Gil & Hartmann, 2007). Finally, I analyze a situation where teammates receive group performance information each period. The frequency of feedback might also play a role on individual behavior. Too frequent information related to free-riding behaviors of teammates, may produce negative effects on individual behavior, such as

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frustration (Buunk et al., 2005; Nikias et al., 2010; Román, 2009). A next step could be analyzing the relation between the manner in which information is shared amount team members' and the frequency with which this information is shared. In summary, this study sheds some interesting results related to the effect of group feedback information within teams. However, future work is needed to understand how accounting and control information can influence cooperation and free-riding behavior within teams.

**APPENDIX**

**APPENDIX 5.1.: Social comparaison questionnaire**

I adapt the instrument of Molleman et al. (2007) using a 5-point scales, ranging from 1 (never) to 5 (often):

(upward assimilation)

There must have been situations in which you experienced someone performing higher (investing higher) than you in your team. In such a situation,

- How often do you think "I will do that as well"?
- How often do you think "That's the way I will do it, too"?

(upward contrast)

There must have been situations in which you experienced someone performing higher (investing higher) than you in your team. In such a situation,

- How often do you thing "I will never invest like that"?
- How often do you thing "I will not attain that"?

(downward assimilation)

There must have been situations in which you experienced someone performing lower (investing lower) in your team. In such a situation,

- How often do you think "That will happen to me, too"?
- How often do you think "Presently, I will do the same"?

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(downward contrast)

There must have been situations in which you experienced someone performing lower (investing lower) in your team. In such a situation,

- How often do you think “I will do much better”?
- How often do you think “I’m glad that I’m not doing so badly”?

**APPENDIX 5.2.: Manipulation check questionnaire**

In order to finish with the activity, please indicate on a scale from 1 (completely disagree) to 5 (completely agree):

1. I have worked hard on this activity.
2. I was highly motivated to take part in this activity.
3. Taking part in this activity was fun.
4. The reward I receive from this activity only depends on my decisions.
5. The common project’s reward depends on the decisions of every member in the team.
6. While taking part in the activity, I felt that the three of us being responsible in the Department set up a team.
7. I have felt compromised with the activity.
8. My personal interests were not as important as the common ones.
9. In any period in the activity, the members of my team have discussed our decisions.
10. During the activity I have identified to the members of my team.
11. I have met my colleagues in the team before the beginning of the activity.
12. I have identified my colleagues in the team before the beginning of the activity.
13. After every decision in the 30 periods, I knew the benefit for the common project.
14. After every decision in the 30 periods, I knew the benefit for my department.

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15. After every decision in the 30 periods, I knew the benefit for the two others departments.
16. Choose from the two figures below the one that best fits with your feelings towards your team during the time that you have involved in the activity.

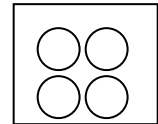
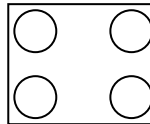
1

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5



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# CHAPTER 6: CONCLUSIONS

## 6.1. Introduction

## 6.2. Summary of findings

## 6.3. Limitations and future research

## 6.4. Conclusions

## References

### 6.1 INTRODUCTION

The final chapter provides an overview and discussion of the findings of the three studies of this dissertation and their implications for research and practice. First the findings of the three studies are summarized in section 6.2. Next, section 6.3 discusses the limitations of these dissertation's and identifies directions for future research. Finally, section 6.4 summarizes findings for management accounting and social psychology research and practice.

### 6.2 SUMMARY OF FINDINGS

This dissertation set out to study the following research question:

***How are management control systems designed and used in team-based settings to increase team members' motivation and performance?***

Three experimental studies were performed to answer this question. The first and second study focused on the use of management control systems and social identity, and its effects on team motivation and performance. These studies were conducted in the tradition of psychology-based experimental work. The first study focused on explaining the effect of the interactive use of control systems and social identity on the identified motivation (i.e. an affective state) of individuals within a team. The second study analyses a mediating model, where identified motivation is the intervening variable between interactive control systems, social identity and team performance. The third study focused on the design of management control systems and social identity, and its effects on team motivation and cooperation. This study was conducted using a traditional social dilemma of experimental economics. The study focused on the design of performance reports at team level and social identity, and its effects on team cooperation, through other intervening variable, the social comparison process between team members. The remainder of this section contains a concise summary of the findings of the three studies.

The first study titled “The use of Management Control Systems, Social Identity and Team Commitment” focuses on the effect of the interactive use of control system and social identity on team members' identified motivation. The general model of workplace commitment of Meyer and Herscovitch (2001) is followed to support these relations. First, any mechanism that increases involvement and participation of individuals in a course of action can increase motivation and commitment to specific target. An interactive use of control systems are characterized by involvement and participation of managers, but also, of organizational members. Secondly, any mechanism that increases identification and association with a specific target can increase motivation and commitment to this target. Social identity is a cognitive

## CHAPTER 6: CONCLUSIONS

process which helps individuals to identify with a specific social category. The more the individual identifies with the social category, the more the individual is going to follow the group norms and values. 120 postgraduate students of Pablo Olavide University participated in the experimental study. The results supported the hypotheses of the model. That is, the interactive control system increased team members' motivation and commitment. Secondly, the social identity of the team increased team members' motivation and commitment. Finally, the effect of the interactive control system was stronger than the effect of social identity on team members' motivation and commitment. The results of this study were satisfactory; especially because one newly developed instrument were used to manipulate the interactive control system in an experimental study, and because one new dimension of commitment (to the team instead to the organization) has been incorporated to management accounting literature.

The second study titled "The effect of Interactive Control Systems and Social Identity on team members' motivation and performance" follows the first one. As I found a direct effect of the interactive control system and social identity on team members' identified motivation, I analyzed how this motivation influenced team performance. Therefore, I developed a mediating model where the two independent variables were the interactive control system and social identity, the mediating variable was the identified motivation of team members, and the dependent variable was the team performance. The experimental study was the same of the first study, but now 144 postgraduate students participated, and the experiment included a second task for measuring team performance. I used two types of analyses: an analysis of mean difference between conditions, and a variance-based approach for the estimation of the mediating model using Partial Least Squares (PLS) technique. The results supported the mediating model. I did not find a direct relation between the interactive control system and social identity and team performance. However, I found indirect relations. The interactive control system increased team performance but through the identified motivation of team members and the social identity increased team performance also through the identified motivation of team members. Moreover, the results suggested the interactive control system can influence salience of team identity, as the interactive control system pushed a group frame.

## CHAPTER 6: CONCLUSIONS

The third study titled “The effect of Group Performance Report on cooperative effort” is focused on the design of one important practice of management control system which is the performance feedback or reporting. I focused on the informational feature of performance report designed at group level, differentiating two designs: an aggregate form (only group information was given to group members) and a detailed form (which combined group and individual information related to teammates). The study also included a second independent variable, the social identity of the team because influenced how individuals interpreted group information. This study, following the second one, also presented a mediating model, but now the intervening variable was the social comparison process, a variable that has been highlighted in social psychology literature for influencing individual performance in group-based settings. Although management accounting literature recently highlighted that both designs of feedback influenced group performance, I suggested in this dissertation that the effect of the aggregate form was higher than the detailed form, as pushed a group frame which facilitated positive (assimilation) social comparison process between team members. I expected a direct relation between the design of performance report and team performance, but also an indirect effect through the social comparison process developed within teams. The model was tested with an experimental study, following economic literature. 144 postgraduate students of Pablo Olavide University participated in the experimental study. I used two types of analyses: an analysis of mean difference between conditions, and a variance-based approach for the estimation of the mediating model using Partial Least Squares (PLS) technique. The results supported the mediating model. That is, an aggregate performance feedback increased team performance through the social comparison process developed within the team. Moreover, the aggregate form also had a direct effect on team performance, through a cognitive process which pushed a group context on individual mind. Finally, social identity moderated the effect of group performance reports on individual behaviour. In teams with high social identity, the positive effects of the aggregate performance reports are stronger than in teams with low social identity. Nevertheless, the negative effects of the detailed form of performance reports are also stronger in teams with high social identity than in teams with low social identity. Therefore, the design of accounting structures is more important in teams where individuals are highly identified with the group.

### 6.3 LIMITATIONS AND FUTURE RESEARCH

This dissertation analyzes the relation between the design and use of management control systems, social identity and team members' motivation and performance. I analyze the hypotheses predicted in Chapter 3, 4 and 5 with two experimental studies. As any empirical study, this dissertation presents limitations, but also new insights for future researchers.

The first study titled "The use of Management Control Systems, Social Identity and Team Commitment" focuses on one dimension of the interactive use of management control systems to influence individual motivation. The first limitation is related to the interactive control system. I developed a new instrument to manipulate the interactive control system in an experimental study. I followed recent revised framework of Simons' Levers of Control of Tessier and Otley (2012) for manipulating this variable. However, interactive control system is a broad concept and it is characterized by different features and dimensions. I only focused on one dimension, related to its intensity, which is related to the time consuming within the team discussing and debating control information. Bisbe, Batista-Foguet and Chenhall (2007, p.809) describe in detail the dimensions of the interactive control system and suggest different effects. For example, the authors suggest the dimension focus on strategic uncertainties refers to the object of the use of the control information, while a non-invasive involvement refers to leadership style. Recently Abernethy, Bouwens and Van Lent (2010) have demonstrated that leadership style is an antecedent of the interactive control system. However, these authors do not analyze the effects of the leadership style and the interactive control system on individual behavior, but they suggest some positive effects. Future researchers could analyze the effects of other dimensions of the interactive use on individual behavior using experimental studies.

The first study has a second limitation related to the operationalization of the identified motivation of team members. I measured identified motivation through team members' affective commitment because researchers suggest commitment is a component of individual motivation (Meyer & Herscovitch, 2001; Meyer, Becker & Vandenberghe, 2004, p.991). However, identified motivation is characterized by other

## CHAPTER 6: CONCLUSIONS

features, such as perception of being evaluated (Wong-on-Wing, Guo & Lui, 2010). Future research is needed for supporting construct validity and internal validity of the model of the first study.

Finally, the first study had a third limitation, because the study analyzed the effects of interactive control system and social identity on individual identified motivation. However, this study did not analyze the effects of this identified motivation on individual behavior within teams. However, the second study of this dissertation covers this gap.

The second study titled “The effect of Interactive Control Systems and Social Identity on team members’ motivation and performance” introduces a mediating model, where identified motivation is the mediating variable between management control systems and social identity and team performance. I operationalized the identified motivation through team affective commitment. Nevertheless, individuals can commit to different foci, as supervisors or organization, instead of the team. And each type of commitment may be enhanced by different processes and also may lead to different individuals’ behavior (Vandenberghe, Bentein & Stinglhamber, 2004). Researchers suggest commitment to the supervisor also influences individual job performance (Bishop et al., 2005; Vandenberghe et al., 2004). And it seems that interactive control system is also related to supervisor leadership style (Abernethy et al., 2010). Therefore, future researchers may focus on other dimensions of the interactive use of management control systems, individuals’ supervisor commitment and job performance.

A second limitation of the second study is related to the type of task used in the experimental study. I used a brainstorming task for measuring team performance. However, communication and cooperation were forbidden between team members. Researchers posit that the type of task can moderate the effects of accounting practices and also social identity on team members’ behavior (Libby & Thorne, 2009; van Dick et al., 2009). That is, the type of task used limits the generalizability of the results. As a consequence, future experimental studies are needed to analyze the model of the second study and support the external validity of the model.

## CHAPTER 6: CONCLUSIONS

The third study titled “The effect of Group Performance Report on cooperative effort” has also a limitation related to the type of task used for measuring cooperative effort within the team. I used a task based on social dilemma situations and communication was forbidden between team members. However, in organizations communication often happens on the work floor and actions can be taken to help others teammates. I posit that the results of the third study may change when communication is allowed between team members (Libby & Thorne, 2009, Román, 2009). The results stress that a detailed performance report may increase a negative downward comparison process between team members. Nevertheless this comparison process may be different in situations where the individual controls the way for increasing team performance (Greenberg, Ashton-James & Ashkanasy, 2007. If team members can cooperate and communicate high-performers can help low-performers and group performance may improve (Román, 2009).

A second limitation of the third study is related to the sample chosen. Only students participated in the third study. However, if participants in the sample were professionals or managers, other individual characteristics could be considered because might moderate the results of the study. For example, I posit social identity influences how individuals interpret control information, but other individual features, such as prior experience or background, can also influence the relation between individual behavior and control information (Naranjo-Gil & Hartmann, 2007).

A third limitation of the third study is related to the mediating variable which is the social comparison process. I assumed that individuals in the third study only compared with teammates related to performance feedback at group level. However, individuals can compare other dimensions, as salary or working conditions (Brown et al., 2007). However, I did not control for other social comparison processes between team members. And it is suggested that these other social comparison processes can complement or conflict with the type of performance feedback participants received in the experimental study.

Finally, other limitation of the third study is related to the feature of the design of performance reports I chose. I focused on aggregation feature. However, there are other features as frequency (high vs. low) or the type of information (financial vs. non-



## CHAPTER 6: CONCLUSIONS

financial measures) which can influence individual behavior. For example, some researchers posit that too frequent information related to teammate's free-riding behaviors may produce negative effects on individual behavior such as anger and frustration (Nikias et al., 2010). And Lau and Moser (2008) found that non-financial performance measures produced positive effects on job performance, because increase the individual commitment to the organization.

In sum, this dissertation posits the importance of individual identified motivation on management accounting literature. Results have shown the design and use of management control systems can influence this identified motivation and therefore team performance. However, I only focus on a specific design of performance reports, and on a specific use of management control systems at group level. Future researchers should analyze the effects of other features of the design and the use of management control systems on team members identified motivation and performance.

### 6.4 CONTRIBUTIONS

The main purpose of this dissertation was to analyze and identify how organizations should design and use management control systems to increase individuals' motivation and performance in team-based settings. The first and the main conclusion is that organizations should adapt the traditional design and use of control systems to these collaborative environments to influence individual motivation. An interactive control system and an aggregate performance report can increase team members' motivation and performance. Furthermore, these control systems practices interact with individual features such as social identity to influence team members' motivation and performance.

This dissertation provides useful theoretical and methodological insights for management accounting research and social psychology research, and also provides useful insights for practice. Related to theory, I incorporate a type of individual motivation (the identified, contrary to the external) in management accounting literature at empirical level. Following a motivational model of social psychology and

## CHAPTER 6: CONCLUSIONS

organizational behavior research (Meyer & Herscovitch, 2001) and theoretical studies of recent management accounting researchers (see Adler & Chen, 2011), I analyze the relation between management control systems and individual identified motivation. I point out that practices that enhance socialization, involvement, interaction and participation of individuals in a course of action, may increase employees identified motivation, and therefore, employees effort. The use of motivational models of related literatures such as social psychology can help management accounting researchers to understand the process by which management control systems influence individual behavior in collaborative environments (Birnberg, Luft & Shields, 2007).

Secondly, I posit that combining economic and social psychology literature can help researchers to identify variables that mediate the relation between management control systems and individual performance. For example, the third study focuses on performance reports, social identity and cooperative efforts within teams. I present a social dilemma situation which is created by the use of group incentives within the team. Economic literature suggests tic-tac or grim trigger strategy in social dilemma situations (that is, each player choose cooperate and continues to choose this cooperative action as long as the other player has always choose cooperate; if the opponent choose defect, thus the player choose defect too in next round) (Gold & Sudgen, 2007). This grim trigger strategy describes a process of social comparison between team members, a process that have been extensively analyzed in social psychology literature (Molleman, Nauta & Buunk, 2007). Therefore, if management accounting researchers combine both type of literatures, it is easy to identify what processes can be enhanced with the use of control. Following economic literature, the use of a detailed performance feedback in team settings, can facilitate the tic-tac strategy, that is, the downward assimilation comparison (I follow the low-performer). Therefore, cooperation will fail across periods. Contrary, following social psychology researchers, the use of aggregate performance feedback in collaborative environments can push a group context, where employees compare with high-performers (upward assimilation) and thus cooperation may increase across periods.

I also provide some contributions to social psychology researchers. First, this dissertation demonstrates that the effect of social identity on team members' behavior depends on the context, that is, on the salience of the social category in a given

## CHAPTER 6: CONCLUSIONS

moment. Traditionally salience is manipulated with colors or group competition (see Haslam, 2001). However, following Towry (2003), I demonstrate that a specific use of control information can also activate the group identity. In this context, where group identity is activated, the team members' identification influences individuals' behavior. Secondly, this dissertation provides some interesting results to organizational behavior literature. I demonstrate the design of performance report can push a social comparison process within teams. Therefore, although comparison is a basic human tendency, organizations can force this process with accounting and control practices. Moreover, the design of these control practices can enhance upward and downward comparison processes. However, in this dissertation I only find a relation between the group performance report and the downward assimilation process instead of the upward process, which is positively related to individual behavior within teams.

Related to methodology, this dissertation answers recent calls of management accounting researchers for empirical studies which support the validity of constructs of the revised framework of Simons' Levers of Control (Tessier & Otley, 2012; p.11). The manipulation of the interactive control system can be used in future works to analyze its relation with other team outcomes, as trust or conflict between team members.

This dissertation also provides some interesting conclusions for practice. In spite of the widespread use of incentives and rewards within organizations to increase employees' motivation, this dissertation stress that managers can use other features of management controls systems. None of the studies developed in the present dissertation used incentives to influence individual behavior. None of the studies analyzed the control feature of control practices (that is, how the individual acts when knows his behavior and performance is controlled). The first and second studies focus on the socialization process of control practices and the third study focuses on the informational feature of performance reports.

Secondly this dissertation suggests organizations can achieve higher levels of individual performance through socialization processes than through practices that enhance identity of the groups. For example, organizations have traditionally used

## CHAPTER 6: CONCLUSIONS

tournaments or group competition to increase social identity of employees with their teams (units or departments). This competition caused individuals to work hard in their teams or units. However, I posit that organizations can achieve higher effects on individual effort through the involvement and participation process than through the social identity process pushed by the group competition. Moreover, competition has been related to negative individual attitude, as frustration.

Finally, this dissertation suggests that managers may not show information related to teammates' performance in some situations. For example, there are employees who do not identify with their group and receive periodically control information related to teammates. This information can stress that other teammates perform better than the individual. Therefore, when the individual compares with his high-performers, he can feel frustration. As a consequence, the individual may reduce his effort on the group, and group performance may suffer.

In sum, economic incentives and control are not the whole solution for motivating individuals within organizations. Individuals respond to social, moral and ethical principles, and management control systems can be used to influence individual through these other processes, enhancing group context and positive social comparison processes between teammates (Adler & Chen, 2011; Rowe, 2004; Sprinkle, 2003; Spence et al., 2011).

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# **APPENDIX:**

## **MATERIAL FOR EXPERIMENTAL STUDIES**

### **A) Support material Study I and II**

**A.1. Documents given to the participants related to the group project.**

**A.2. Screens of Z Tree software.**

### **B) Support material Study III**

**B.1. Documents given to the participants related to the group project.**

**B.2. Screens of Z Tree software.**

### **A) SUPPORT MATERIAL STUDY I AND II**

In this appendix I present three type of material. First, the instructions given to the participants in study I and II of the dissertation are shown (chapter 3 and 4)<sup>39</sup>. Secondly, the documents used to the group decision and brainstorming tasks are shown. The documents given to the participants are different in phase I, II and III. Finally, I present the screens that participants saw when they were participating. I present instructions, documents and screens only for one experimental condition (High interactive use of management control system).

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<sup>39</sup> Study I “The use of Management Control Systems, Social Identity and Team Commitment” and Study II “The effect of Interactive Control Systems and Social Identity on team members’ motivation and performance”.

## A.1 Instructions and documents given to participants<sup>40</sup>

### *a.1.1. Documents Phase I.*

#### INSTRUCTIONS

You are at Phase I of the activity. You are a member of a team of investors interested in investing in the construction of a Child care center. The project has already been approved by the local city government. When the construction is finished, the local government will invite tenders for the management of the Nursery.

Here you can find the information dossier of the Phase I, for the project for constructing the Nursery. This information provided is previous to the beginning of the jobs for construction. You have five minutes to read it.

Once you have read this information, your team and you have ten minutes to discuss it in your work desk. You cannot talk about personal issues, but about the Child care Project and the information you have been given. In this room, the person in charge will look after the fulfilment of the rules. Furthermore, this manager will keep you informed when the time for discussion is finished.

Once the time for discussion is finished, you must enter one by one to the Computers Room. Every participant will sit at the table assigned with the same letter and number of his/her sticker.

From your computer you will have to answer how much will your team invert in the construction of the Public Nursery (maximum: 300.000, 00€). Remember that it is not necessary that every member at the group agrees on the money to invest.

Below you will find:

1. Plans for the project (first and seconds floor)
2. Position at the city map

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<sup>40</sup> Some documents are presented in Spanish language, because the experiments were made with Spanish students.

## **APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES**

3. Duration of the construction project
4. Budget of the project
5. A letter from the mayor which states the approval of the project and explains the reasons of why is necessary the project of this Child care center for the city.

Remember that once you have finished reading the following information, you have ten minutes to discuss with your team. Once the time is finished, you will have to go ahead the Computers Room to answer about the level of investment.

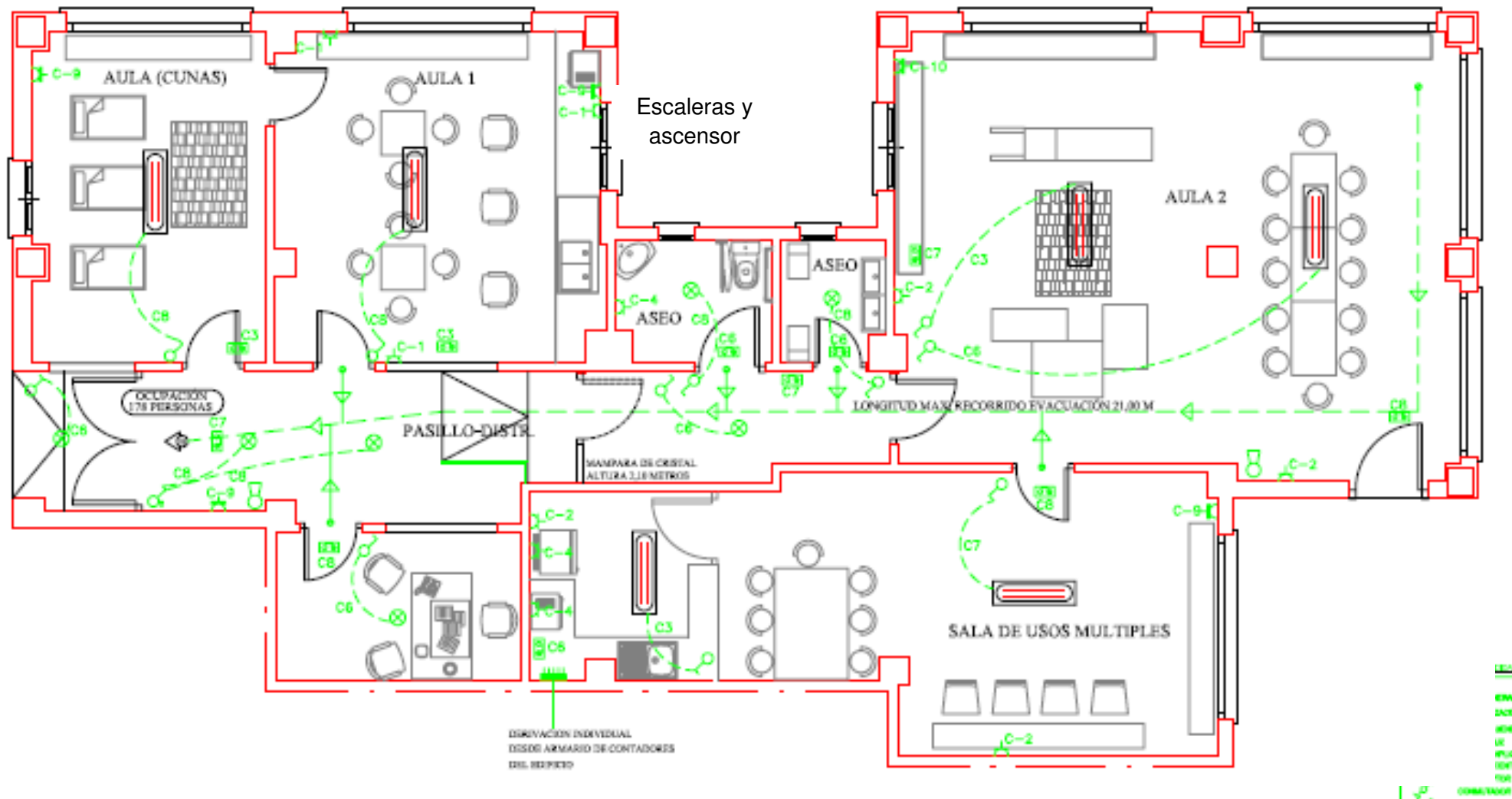
If there might be anything about the instructions that you have not understood, please ask the person in charge of the room.



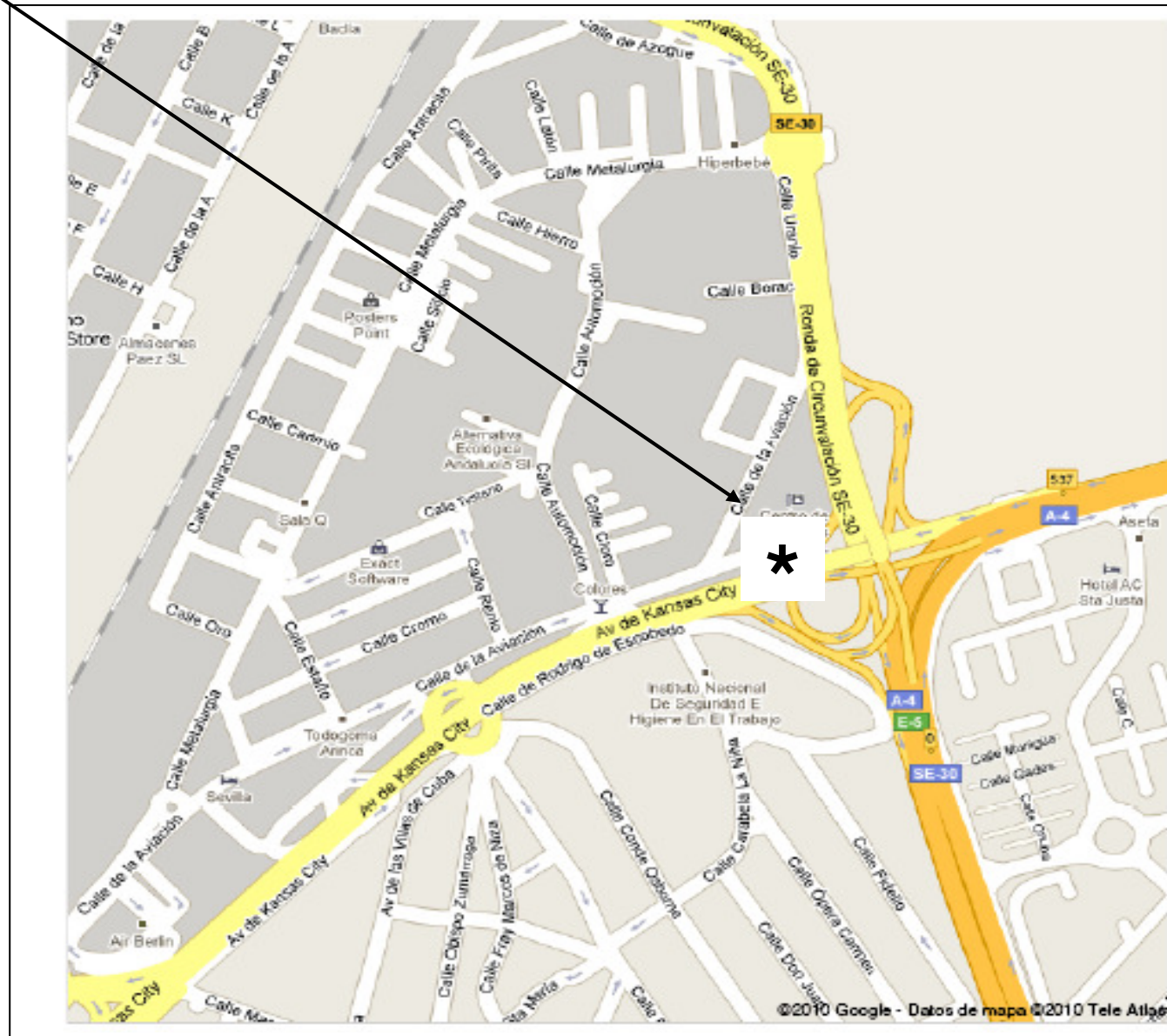


## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### 1.- PROJECT PLANS: SECOND FLOOR



## 2.-POSITION AT SEVILLE'S MAP



### 3.- DURATION OF THE CONSTRUCTION PROJECT

- El edificio será construido sobre un área de 270 metros cuadrados, localizado en el Polígono Industrial de Sevilla.
- El Excmo. Ayuntamiento de Sevilla cede para su explotación el terreno en el que se situará la Guardería por un periodo de cincuenta (50) años.
- El edificio abarcará un área total de 210 metros cuadrados (dos plantas), y un patio de 159 metros cuadrados.
- La construcción del edificio durará nueve (9) meses.

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### 4.- PROJECT'S BUDGET

Desbroce y limpieza del terreno	1.300,00 €
Movimiento de tierra	2.300,00 €
Cimentación y estructura	78.400,00 €
Albañilería:	19.600,00 €
Revestimientos:	41.500,00 €
Cubierta	13.200,00 €
Instalación de fontanería y saneamientos:	11.700,00 €
Instalación de electricidad:	7.800,00 €
Carpintería, cerrajería y vidrios:	33.600,00 €
Pinturas:	10.600,00 €
<b>Total presupuesto (obra y construcción):</b>	<b>220.000,00 €</b>
Mobiliario:	20.000,00 €
<b>Total presupuesto</b>	<b>240.000,00 €</b>

**5.- LETTER FROM THE MAYOR OF SEVILLE CITY**



**COMUNICADO DE PRENSA**

**El Alcalde de Sevilla aprueba la construcción de una guardería para el Polígono Industrial de Sevilla.**

El Alcalde de Sevilla ha concedido la licencia de obras para la construcción de una guardería pública en el Polígono Industrial de Sevilla. Esta concesión es fruto del compromiso asumido por el Alcalde y permitirá que los trabajadores de este Polígono Industrial tengan atendidos a sus hijos durante las horas de trabajo en un moderno centro.

El nuevo centro, con un presupuesto cercano a los 250.000 euros, se construirá en una parcela cedida por el Excmo. Ayuntamiento, concretamente en la calle Aviación, esquina con la SE-30. Este centro tendrá dos plantas con un total de 210 metros cuadrados. Además, el edificio contará con un patio al aire libre de más de 100 metros cuadrados, parcialmente cubierto.

Esta acción complementará las mejoras realizadas por el Excmo. Ayuntamiento en los Polígonos Industriales de la ciudad.

Sevilla, Octubre 2010.

*a.1.2. Documents Phase II.*

1.- NEWSPAPER ARTICLE

Año XII. Número 4.154 **1,20€.** **SABADO 30 DE OCTUBRE DE 2010**

# Diario de Sevilla

www.diariodesevilla.es

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**35- Colocada la primera piedra en la Guardería del Polígono Industrial de Sevilla.**



**El Alcalde de Sevilla inaugura hoy las obras del Centro Infantil del Polígono Industrial**

El Ayuntamiento de Sevilla ha confirmado el inicio de las obras del Centro Infantil que dará servicio a los trabajadores del Polígono Industrial. Las obras tienen una duración prevista de 9 meses.

**2.- LETTER FROM THE MANAGER OF THE PROJECT ABOUT TIME LENGHT**

Sevilla, 26 de Octubre de 2010.

Estimados inversores,

Esta carta es para informar que las obras de la guardería se han iniciado el día 25 de Octubre.

El plazo de ejecución de las obras es de nueve (9) meses, por lo que la fecha límite de finalización está previsto para el día 25 de Julio de 2011. La guardería estará abierta para el próximo curso 2011-2012.

Estamos orgullosos de informarles que el proyecto cumplirá con los términos acordados con el Excmo. Ayuntamiento de la ciudad.

José Pérez

Gerente

La Empresa Constructora



## 7 LETTER FROM THE MANAGER OF THE PROJECT ABOUT BUDGET AND COSTS

Sevilla, 26 de Octubre de 2010.

Estimados inversores,

El motivo de esta carta es comunicarles que el presupuesto inicial para el proyecto de construcción de la Guardería ha sido modificado. El problema detectado es que en el presupuesto inicial no se había incluido la adecuación e idoneidad de la cubierta del patio, y tampoco el mobiliario necesario para la zona de recreo del patio.

Estos cambios suponen un incremento del 10% sobre el presupuesto inicial. Así, el nuevo presupuesto asciende a 264.000,00€.

Les pedimos disculpas por los inconvenientes que este hecho pueda causar, pero consideramos que es nuestra obligación informarles, tan pronto como sea posible, de los cambios que se produzcan durante la ejecución del proyecto y del presupuesto.

José Pérez

Gerente

La Empresa Constructora

#### 4.- LETTER FROM ENVIRONMENTAL ORGANIZATION

Sevilla, 26 Octubre, 2010.

Estimados inversores,

URBAN NATURE es una organización sin ánimo de lucro que supervisa y controla el comportamiento de las empresas en base al Proyecto de Ciudades Sostenibles de la Comunidad Europea. Este Proyecto promueve la sostenibilidad urbana en Europa, y tiene como objetivo influir en las políticas y la planificación ambiental a nivel europeo, nacional, regional y local.

Nuestro objetivo es asegurar que los nuevos proyectos adopten prácticas de ejecución de acuerdo con el Proyecto de Ciudades Sostenibles de la Comunidad Europea (proyecto en el que se incluye la ciudad de Sevilla). Por esta razón, les solicitamos un informe completo sobre el impacto ambiental que tendrá el proyecto de la construcción de la Guardería en la zona del Polígono Industrial y alrededores. Además, les solicitamos un informe sobre las alternativas energéticas a utilizar, y un informe sobre la gestión de residuos.

En el caso de que no recibiéramos en el plazo de un mes estos informes, cumpliendo con las buenas prácticas locales, se informará al área de Medio Ambiente del Excmo. Ayuntamiento de Sevilla, para que tome las medidas oportunas (la obra podría ser retrasada o paralizada, según Ordenanza local nº80/2007).

Esperamos su colaboración. Reciban un cordial saludo,

Mariló Gómez

Coordinadora de Sevilla

URBAN NATURE

*a.1.3. Documents Phase II.*

1. NEWSPAPER ARTICLE

Año XII. Número 4.157 **1 euro.** MARTES, 7 DE JUNIO, 2011 10

# Diario de Sevilla

www.diariodesevilla.es

XxxlIIII xxxlIIII xxxlIIII

XxxlIIII xxxlIIII xxxlIIII

Descubren arena contaminada en la guardería del Polígono Industrial de Sevilla P.20

**20- Arena contaminada en la guardería del Polígono Industrial de Sevilla**



**babylove**

**Nuevos problemas en la guardería del Polígono Industrial de Sevilla**

Los trabajadores del Polígono Industrial de Sevilla están muy preocupados por el proyecto de la guardería, porque la empresa constructora ha utilizado un material contaminante en la zona de recreo del patio.

**2.- LETTER FROM EMPLOYEES OF THE INDUSTRIAL PARK**

Sevilla, 25 Junio, 2011.

Estimados inversores,

Me dirijo a Vds. como representante de los trabajadores del Polígono Industrial de Sevilla. Hemos tenido conocimiento del uso de un material tóxico en la Guardería que será inaugurada el día 1 de Agosto por el Alcalde de la ciudad.

Como padres estamos preocupados por la salud de nuestros hijos. Queremos informarles de que nuestros niños no serán matriculados en este Centro hasta que se realicen las correcciones pertinentes y se nos informe al respecto.

Atentamente,

Diego López

El representante de los trabajadores

Polígono Industrial de Sevilla

### 3.- LETTER FROM MANAGER OF CONSTRUCTION FIRM

Sevilla, 30 Junio, 2011.

Estimados inversores,

El motivo de esta carta es informarles del problema que hemos detectado en la arena de la zona de recreo del patio de la Guardería. Nuestro proveedor nos envió material contaminado por un error en su proceso de control de calidad. En la actualidad, nuestro abogado está revisando el contrato de compra firmado con el proveedor. El objetivo es reclamar una indemnización por estos hechos.

Este problema tiene importantes implicaciones para nuestro proyecto. En primer lugar, serán necesarias costosas correcciones si se quiere obtener el permiso de apertura del Centro. Estas correcciones implican un nuevo incremento en el presupuesto del 20% sobre el total, lo que supone que el nuevo presupuesto supera los 300.000,00 euros. En segundo lugar, la fecha límite de finalización de las obras se retrasará dos meses. Aunque el Alcalde inaugurará la Guardería el próximo mes de Agosto, sólo podrá inaugurar una parte. Por tanto, la apertura completa de la Guardería no se podrá realizar hasta el mes de Octubre (2011). Sin embargo, nuestra empresa seguirá haciendo un gran esfuerzo para ajustar el presupuesto y terminar el trabajo tan pronto como sea posible.

Atentamente,

José Pérez

Gerente

La Empresa Constructora

**4.- LETTER OF THE MAYOR OF THE CITY**



**COMUNICADO DE PRENSA**

**El Alcalde inaugurará la Guardería pública para el Polígono Industrial de Sevilla el próximo día 1 de Agosto de 2011.**

El Alcalde de Sevilla inaugurará la nueva Guardería pública para el Polígono Industrial de Sevilla el próximo día 1 de Agosto. Con este proyecto, el Alcalde cumple con los compromisos adquiridos con los trabajadores del Polígono Industrial de Sevilla.

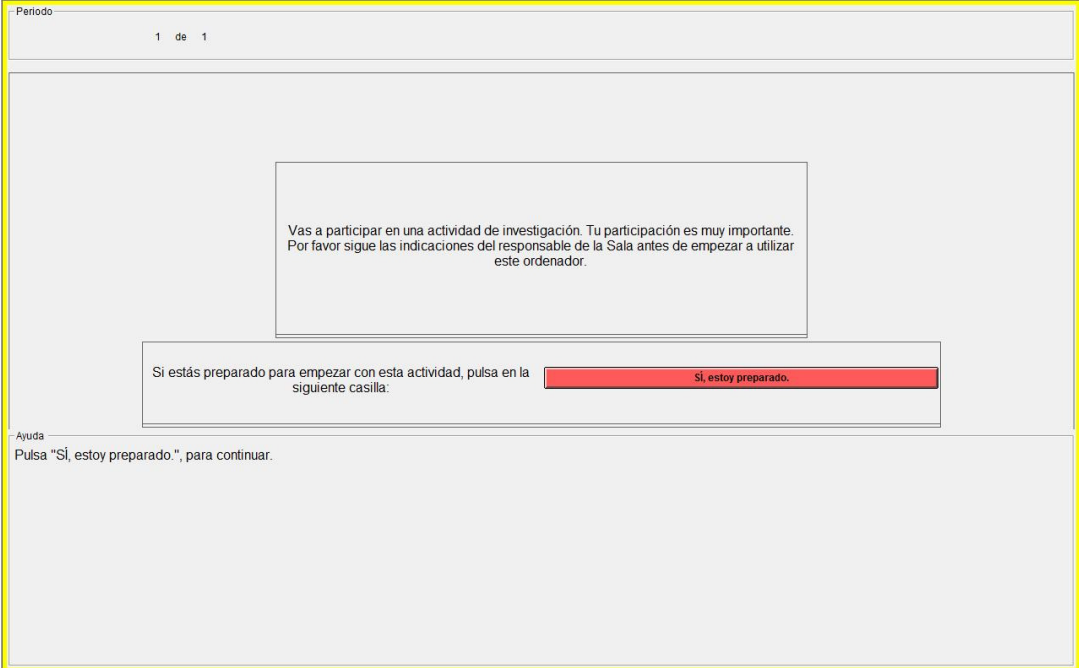
Este nuevo centro se ha construido sobre una parcela cedida por el Excmo. Ayuntamiento de Sevilla, concretamente en la calle Aviación, esquina con SE-30.

Sevilla, Julio 2011.

## A.2 Screens of Z Tree software: Studies I and II<sup>41</sup>

I present screens participant saw in one experimental condition (High interactive use of management control system).

### Welcome screens:



Periodo 1 de 1

Vas a participar en una actividad de investigación. Tu participación es muy importante. Por favor sigue las indicaciones del responsable de la Sala antes de empezar a utilizar este ordenador.

Si estás preparado para empezar con esta actividad, pulsa en la siguiente casilla.

**Sí, estoy preparado.**

Ayuda  
Pulsa "Sí, estoy preparado.", para continuar.

<sup>41</sup> Support material is presented in Spanish language, because the experiments were made with Spanish students.

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

**Nombre:**

**Apellidos (2):**

**Indica el nombre que habéis elegido para vuestro equipo:**

Por favor, responde de manera individual a las cuestiones que te aparecerán en las siguientes pantallas.  
No está permitido hablar con ningún compañero de la Sala.  
Si tienes alguna duda, por favor levanta la mano y el responsable de la Sala te atenderá.  
Una vez que finalices todas las cuestiones, espera en silencio, a que el responsable de la Sala os dé las instrucciones oportunas.

[Continuar](#)

### Screen economic commitment of phase I (II and III are the same):

PERIODO 1 DE 2

Recuerda que formas parte de un equipo de individuos que están interesados en invertir en el proyecto de la Guardería para los trabajadores del Polígono Industrial de Sevilla. Teniendo en cuenta la información que se os ha suministrado sobre el proyecto de la Guardería, por favor contesta cuánto dinero estaría dispuesto a invertir tu equipo.

La inversión de mi equipo para el proyecto de la guardería debería ser:

☐ 0 €  
☐ 60.000 €  
☐ 120.000 €  
☐ 180.000 €  
☐ 240.000 €  
☒ 300.000 €

[Continuar](#)

Ayuda  
Antes de continuar, PULSA sobre la inversión deseada.



## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

PERIODO 1 DE 2

Recuerda que formas parte de un equipo de individuos que están interesados en invertir en el proyecto de la Guardería para los trabajadores del Polígono Industrial de Sevilla. Teniendo en cuenta la información que se os ha suministrado sobre el proyecto de la Guardería, por favor contesta cuánto dinero estaría dispuesto a invertir tu equipo.

La inversión de mi equipo para el proyecto de la guardería debería ser

Dialog

¿ESTÁ SEGURO DE LA INVERSIÓN SELECCIONADA?

SI

NO

Continuar

Ayuda  
Antes de continuar, PULSA sobre la inversión deseada.

### Screen Interactive use questionnaire:

Periodo 1 de 1

Por favor, indica en qué medida has usado en los debates con tu equipo, la información que te han suministrado sobre el proyecto, de acuerdo a las siguientes descripciones: Debes señalar sólo una respuesta, pulsando sobre un número (1, 2, 3, 4, 5).

a) Fijar y negociar objetivos sobre el proyecto.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 Totalmente
b) Intercambiar ideas y formas de mejorar el proyecto.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 Totalmente
c) Para discutir con el resto de miembros mi equipo.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 Totalmente
d) Como herramienta de aprendizaje.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 Totalmente

Continuar

Ayuda  
Antes de continuar, **RECUERDA** contestar todas las cuestiones.

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### Screen Social identity questionnaire:

PERIODO	
1 DE 1	
Por favor, contesta a las siguientes preguntas respecto a tu relación con tu equipo. Debes señalar sólo una respuesta, pulsando sobre un número (1, 2, 3, 4, 5), indicando tu nivel de acuerdo respecto de las siguientes cuestiones.	
a) Yo me veo a mí mismo como miembro de mi equipo.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
b) Me complace ser un miembro de mi equipo.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
c) Me siento estrechamente vinculado con otros miembros mi equipo.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
d) Yo me identifico con otros miembros mi equipo.	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
<div>Continuar</div>	
Ayuda Antes de continuar, <b>RECUERDA</b> contestar todas las cuestiones.	

### Screen attitudinal commitment questionnaire:

PERIODO	
1 DE 1	
Por favor, ahora contesta individualmente a las siguientes cuestiones sobre el proyecto de la Guardería para los trabajadores del Polígono Industrial de Sevilla: Debes señalar sólo una respuesta, pulsando sobre un número (1, 2, 3, 4, 5), indicando tu opinión respecto de las siguientes cuestiones.	
a) ¿Crees que la idea original de la Guardería es sensata?	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
b) ¿Crees que es sensato que se proceda con el proyecto de la Guardería?	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
c) ¿Crees que es probable que se supere cualquier problema con el proyecto de la Guardería?	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
d) ¿Crees que se decepciona a la comunidad si el proyecto de la Guardería no se ejecuta?	<input type="radio"/> 1 Nada <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input checked="" type="radio"/> 5 Totalmente
<div>Continuar</div>	
Ayuda Antes de continuar, <b>RECUERDA</b> contestar todas las cuestiones.	

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### Screen Brainstorming task (only used for Study II – Chapter 4):

Ahora, vas a participar en una lluvia de ideas a través del ordenador.

En la siguiente pantalla, debes escribir (de manera individual) problemas que se te ocurran que pueden surgir en la construcción de una Guardería.

Recuerda que estás trabajando con otros miembros de tu equipo en esta actividad. El rendimiento de tu equipo sería igual a la suma del número de problemas que cada miembro del equipo identifique (no importa que haya problemas que se repitan entre los miembros, lo importante es el número de problemas).

El rendimiento de tu equipo será comparado con el rendimiento de otros equipos que están participando.

**NO ESCRIBAS NADA EN LA SIGUIENTE PANTALLA HASTA QUE EL RESPONSABLE DE LA SALA TE LO INDIQUE.**

Continuar

### Screen Brainstorming task (only used for Study II – Chapter 4):

[illegible]

## B) SUPPORT MATERIAL STUDY III

In this appendix I present the instructions given to the participants in study III<sup>42</sup> and the screens that participants saw when they were participating. I present instructions and screens only for one experimental condition (Aggregated performance report and High social identity teams).

### B.1 Instructions given to participants<sup>43</sup>

#### INSTRUCTIONS

You are the Head of the Unit of Investigation and Development (I+D) at a pharmaceutical company. The company has also two other departments of I+D, with their own Head of Units.

The manager of the company has called for a meeting to the three Head of Units. In this meeting the director has launched a new project where you three will participate and set up a new work team. The company thinks that the participation of the three departments of I+D will generate bigger incomes. The company is willing to produce as much incomes as possible.

**REMEMBER! THIS PROJECT IS RATHER IMPORTANT FOR YOUR  
PHARMACEUTICAL COMPANY, AS IT WILL ALLOW YOU TO  
INCREASE THE MARKET SHARE AND TAKE IT AWAY TO YOUR  
COMPETITORS  
(those participants wearing a different colour skirt)**

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<sup>42</sup> Study III “The effect of Group Performance Report on cooperative effort”.

<sup>43</sup> Some documents are presented in Spanish language, because the experiments were made with Spanish students.

## A. Description of the activity

You, as the Head of one of the Units of I+D, must decide in the name of your Unit about the level of investment in the new project. You have to choose between these two options:

- **Investing a high level of resources** at your Department for the common project.
- **Investing a low level of resources** at your Department for the common project.

Here below you can find the costs and incomes that every option can generate for the common Project and for the Department.

a) **The costs for your department:** The costs for the participation of your Department in the common Project are the following one:

- If you choose investing a **high** level of resources in the common Project:
  - o This means **a cost of 15€ for your Department.**
- If you choose investing a **low** level of resources in the common Project:
  - o This means **a cost of 0€ for your Department.**

b) **The incomes of the common Project** (to share between the three Units): The incomes of the common project have been estimated as follows:

- If the three Head of Units choose to invest a high level of resources in the common Project:
  - o An income of **75€ for the common Project** will be generated, equally divided between the three Units (this means 25€ for each one)
- If any of the three Heads of Units choose to invest a low level of resources (but only if the other two choose a high level of resources):
  - o An income of **45€ for the common Project** will be generated, equally divided between the three Units (this means 15€ for each one)
- If the three Head of Units choose to invest a low level of resources for the common Project:

- An income of **15€ for the common Project** will be generated, equally divided between the three Units (this means 5€ for each one)

**This activity consists of 30 periods.**

Your Department's level of investment for the project must be decided in every period.

This means that the incomes for the project will be generated in every period depending on the investment chosen by the three Head of Units.

After every period, a yield report will be sent to your computer, telling this:

- **The income of the common project generated in that period (to share between the three departments)**

## **B. Your profits at this activity**

**The profits of your Unit in every period will be equal to the proportional part of the common Project's income less the costs of your Unit based on the invested resources.**

Once the activity is finished, you, as manager of your Unit, will receive a profit depending on your Unit's profit. **You will be paid depending on the total income generated for your Unit in the 30 periods. This is, for every 50€ of profit for your Unit, you will receive 1€.** For instance:

- If your Unit has reached profits of 10€ in every period, and therefore has accumulated 300€ in the 30 periods ( $10€ \times 30 \text{ periods}$ ), you will receive 6€ as reward for the activity ( $300€/50€ = 6€$ ).
- If your Unit has reached profits of 0 euros in the first fifteen periods, and 10€ in the next fifteen, and therefore has reached 150€ in the thirty periods, you will receive 3 euros as reward for the activity ( $150€/50€ = 3€$ ).

Be aware that every period is able to generate different profits for your Unit, depending on the decision of the three different Heads of Units.

Once the activity is finished, you will be paid in the other room the reward you have gotten. To get this, you must mark at the last screen the letter and the number of the computer you have used for the activity.

### **C. Activity Procedural**

Three participants' teams will be made with the people wearing the same colour of T-shirt and company. That said, the activity is COMPLETELY ANONYMOUS. because any of the participants knows exactly who their colleagues at the company working for the common project are.

At the beginning of the activity, the computer will inform you about your identification as manager of the common project (**manager X, manager Y or manager Z**).

### **D. Beginning of the activity**

Once the participants have read the instructions, we will go ahead the Computers Room. You will start by answering some questions at the computer, in order to ensure you have understood the activities' instructions. Once these have been understood by everyone, the manager of the room will indicate the beginning of the activity. Remember that you have to choose during 30 periods.

**Thank you very much for your participation.**

## **B.2 Screens of Z Tree software Study III.**

I present screens participant saw in one experimental condition (Detailed performance report and High social identity teams).

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### Screen control questionnaire for instructions:

Para asegurarnos de que has entendido las instrucciones de esta actividad, por favor, contesta a las siguientes preguntas. Una vez que todos los participantes hayan entendido las instrucciones, el responsable de la sala os indicará que empieza la actividad. Recuerda que debes decidir durante 30 periodos:

1. Si tú eliges invertir **un alto nivel de recursos** en el Proyecto Común en un período, el coste para tu Departamento es: ☐ 15 euros  
☐ 0 euros  
☐ 30 euros
2. Si los tres responsables de Departamento elegís **un bajo nivel de recursos** en el Proyecto Común en un período, el ingreso del Proyecto Común es de: ☐ 0 euros  
☐ 45 euros  
☐ 15 euros
3. Si los 3 responsables de Departamento elegís **un alto nivel de recursos** en el Proyecto Común en un período, la parte proporcional del ingreso del Proyecto Común para cada Departamento es de: ☐ 25 euros  
☐ 75 euros  
☐ 45 euros
4. Si tú has elegido invertir **un alto nivel de recursos**, pero un responsable de otro Departamento ha elegido **un bajo nivel de recursos**, el ingreso del Proyecto Común es de: ☐ 25 euros  
☐ 75 euros  
☐ 45 euros

OK

### Welcome screen:

Recuerda que estás trabajando en equipo con compañeros de tu misma empresa  
(mismo color de camiseta), pero no sabes con cuál de ellos.

No olvides que el proyecto que vais a desarrollar los tres responsables  
es para lanzar un nuevo producto que **permite ganar cuota de mercado a vuestra empresa,**  
**y por tanto cuota de mercado que pierde vuestro competidor** (las otras empresas farmacéuticas).

OK



## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### Screen for decision in period 1:

Periodo 1

¿Qué nivel de inversión eliges para el proyecto común, en nombre de tu Departamento? ☐ Nivel de inversión ALTO  
☐ Nivel de inversión BAJO

**Siguiente**

### Screen with a detailed performance report after period 1:

<b>Ingreso del Proyecto Común (euros)</b>	<b>45</b>
---	-----------

**Responsable X:**

- Ha elegido un Nivel de inversión ALTO.
- El coste de su Departamento es 15 €.
- El beneficio de su Departamento ha sido (euros): **0**  
(ingresos menos costes del Departamento)

**Responsable Y:**

- Ha elegido un Nivel de inversión ALTO.
- El coste de su Departamento es 15 €.
- El beneficio de su Departamento ha sido (euros): **0**  
(ingresos menos costes del Departamento)

**Responsable Z:**

- Ha elegido un Nivel de inversión BAJO.
- El coste de su Departamento es 0 €.
- El beneficio de su Departamento ha sido (euros): **15**  
(ingresos menos costes del Departamento)

**Siguiente**

## APPENDIX: SUPPORT MATERIAL FOR EXPERIMENTAL STUDIES

### Screen social comparison questionnaire:

Por favor, contesta a las siguientes preguntas en una escala de 1 a 5, donde 1 significa "nunca" y 5 "a menudo".

Debes señalar solo una respuesta, pulsando sobre un número (1, 2, 3, 4 o 5):

En la actividad que acabas de realizar ha habido situaciones en las que algún compañero de equipo ha invertido más recursos que tú en el proyecto común. En esta situación,

- Con qué frecuencia has pensado "Yo haré lo mismo también".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

- Con qué frecuencia has pensado "Así es como lo voy a hacer yo también".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

En la actividad que acabas de realizar ha habido situaciones en las que algún compañero de equipo ha invertido más recursos que tú en el proyecto común. En esta situación,

- Con qué frecuencia has pensado "Yo nunca invertiré como él".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

- Con qué frecuencia has pensado "Yo no voy a actuar de esa manera".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

En la actividad que acabas de realizar ha habido situaciones en las que algún compañero de equipo ha invertido menos recursos que tú en el proyecto común. En esta situación,

- Con qué frecuencia has pensado "que esto me pasará a mí también".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

- Con qué frecuencia has pensado "Ahora, haré lo mismo".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

En la actividad que acabas de realizar ha habido situaciones en las que algún compañero de equipo ha invertido menos recursos que tú en el proyecto común. En esta situación,

- Con qué frecuencia has pensado "Yo lo haré mucho mejor".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

- Con qué frecuencia has pensado "Me alegro de no estar actuando tan mal".      nunca ☐ ☐ ☐ ☐ ☐ a menudo

**Siguiente**

### Screen manipulation check questionnaire:

Por favor, para terminar, indica en una escala de 1 a 5 tu grado de acuerdo con las siguientes cuestiones (1= totalmente en desacuerdo; 5 = totalmente de acuerdo).

Debes señalar solo una respuesta, pulsando sobre un número (1, 2, 3, 4 o 5):

1. He participado en serio en esta actividad.      totalmente en desacuerdo ☐ ☐ ☐ ☐ ☐ totalmente de acuerdo

2. Estaba muy motivado/a para realizar bien esta actividad.      totalmente en desacuerdo ☐ ☐ ☐ ☐ ☐ totalmente de acuerdo

3. Participar en esta actividad ha sido divertido.      totalmente en desacuerdo ☐ ☐ ☐ ☐ ☐ totalmente de acuerdo

4. La recompensa que recibo en esta actividad depende solamente de mis decisiones.      totalmente en desacuerdo ☐ ☐ ☐ ☐ ☐ totalmente de acuerdo

5. El beneficio del proyecto común depende de las decisiones de todos los tres miembros del equipo.      totalmente en desacuerdo ☐ ☐ ☐ ☐ ☐ totalmente de acuerdo

**Siguiente**



# **RESUMEN EN ESPAÑOL:**

## **(Summary in Spanish)**

### **A) Resumen**

**A.1. La importancia de estudiar los entornos de trabajo en equipo**

**A.2. La importancia de estudiar los sistemas de control de gestión**

**A.3. La importancia de estudiar la identidad social**

### **B) Pregunta de investigación y contribuciones**

**B.1. Pregunta de investigación**

**B.2. Contribuciones**

### **Referencias bibliográficas**

## **A) RESUMEN**

Esta tesis investiga empíricamente cómo las organizaciones deben diseñar y usar los sistemas de control de gestión en entornos de trabajo en equipo. Además, analiza cómo los sistemas de control de gestión interaccionan con la identidad social de los equipos para influir en su rendimiento. Se analizan dos características de los sistemas de control de gestión: el uso interactivo y el diseño de informes de rendimiento grupales. La hipótesis general es que los sistemas de control de gestión, cuando se usan en entornos colaborativos, deben influir sobre la motivación identificada de los individuos. Y esta motivación tiene un efecto directo y positivo sobre el comportamiento individual de los miembros del equipo, y por tanto, sobre el rendimiento del grupo.

La hipótesis de esta tesis se ha testado con dos estudios experimentales realizados en la Universidad Pablo de Olavide de Sevilla (España) donde participaron 288 estudiantes. Se presentan dos modelos de mediación. El primer modelo analiza el efecto indirecto del uso interactivo de los sistemas de control de gestión y de la

identidad social en el rendimiento del grupo, vía la motivación identificada de los miembros del equipo. El segundo modelo analiza el efecto directo e indirecto de los informes de rendimiento grupales y de la identidad social en el rendimiento del grupo, vía el proceso de comparación social entre los miembros del equipo. En general, los resultados de los estudios experimentales validan los dos modelos presentados.

Esta tesis contribuye a la literatura en varias líneas. En primer lugar, incorpora un tipo de motivación (la identificada) en la literatura de control de gestión, donde tradicionalmente se ha analizado la motivación extrínseca de los individuos. En segundo lugar, combina la literatura de economía y de psicología social para plantear dos modelos de mediación que permiten identificar las variables mediadoras entre los sistemas de control de gestión y el rendimiento de un equipo de trabajo. Estas variables son la motivación identificada de los individuos y el proceso de comparación social entre individuos de un mismo grupo. Por último, esta tesis analiza conjuntamente dos variables: los sistemas de control de gestión y la identidad social de los equipos. Se pone de manifiesto que estas dos variables interactúan entre sí, y esta interacción produce diferentes efectos sobre el rendimiento del grupo.

### **A.1 La importancia de estudiar los entornos de trabajo en equipo**

En las dos últimas décadas las organizaciones se han tenido que adaptar a entornos más competitivos y globalizados. Como consecuencia, las organizaciones han buscado estructuras más flexibles y planas. Varios métodos se han utilizado para conseguir esta flexibilización, como por ejemplo, la centralización de las actividades principales y la externalización de actividades secundarias, y la utilización de entornos de trabajo en equipo, tanto dentro de las organizaciones, como entre las organizaciones (Berry et al., 2009; Chenhall, 2008).

Estas estructuras basadas en equipo han supuesto cambios importantes. Por un lado, el tipo de relación entre empleados de una organización ha cambiado. Tradicionalmente las relaciones dentro de las organizaciones han sido verticales y jerárquicas. A nivel de investigación se analizaba la relación entre un superior y su/s subordinado/s. Sin embargo, el trabajo en equipo implica relaciones a nivel horizontal, donde dos o más

individuos deben alcanzar unos objetivos comunes, y para ello deben coordinar sus recursos y cooperar entre ellos. Por otro lado, estas relaciones colaborativas entre individuos han puesto de manifiesto nuevos procesos que no se dan en entornos de trabajo individual, como la comparación social entre individuos, la identidad social o el proceso de supervisión mutua entre los miembros del grupo, que pueden influir en el rendimiento del grupo.

El trabajo en equipo debe llevar a mejoras en la flexibilidad y eficiencia de las organizaciones, sin embargo, la realidad es bien distinta, y el trabajo en equipo no lleva automáticamente a mejoras en el rendimiento (Lount y Phillips, 2007; Salas, Goodwin y Shawn, 2009). Cuando no se alcanza el rendimiento esperado en un grupo de trabajo se señalan dos motivos principales: la falta de coordinación y la falta de motivación. La falta de coordinación hace referencia a la incapacidad de los miembros del equipo de poner en común toda la información o recursos que tienen disponibles para realizar eficientemente la tarea asignada. La falta de motivación hace referencia a la disminución del esfuerzo de los miembros del equipo, en comparación con el esfuerzo que son capaces de realizar cuando trabajan solos. Esta tesis se centra en el problema de falta de motivación de los miembros de un equipo de trabajo. Esta falta de motivación produce problemas adicionales dentro de los grupos de trabajo, como el polizón (o free-rider) que se produce cuando un individuo del grupo intenta aprovecharse del trabajo de los compañeros; o como la holgazanería social que se produce cuando todo el grupo reduce su nivel de esfuerzo; o como el conflicto, que se produce cuando los miembros del equipo no se ponen de acuerdo en la organización del trabajo (Mathieu et al., 2008).

Desde la literatura de psicología social se ha sugerido que la motivación de los individuos en entornos de trabajo en equipo funciona de manera diferente a la motivación en entornos de trabajo individual (Adler y Chen, 2011; Gagné y Deci, 2005). Tradicionalmente se ha asumido que los individuos son egoístas y sólo realizan las tareas de trabajo si van a obtener algo a cambio, o bien si van a evitar algún castigo. Este tipo de motivación se conoce como la motivación extrínseca. Sin embargo, se ha sugerido que en entornos de trabajo en equipo el individuo debe sentir que los objetivos del grupo son coherentes con sus propios valores y prioridades, y debe sentir estos objetivos como suyos propios para implicarse realmente en el grupo.

Este tipo de motivación se identifica con una motivación más autónoma, en contra de la extrínseca, donde el individuo siente que él puede decidir sobre su propio comportamiento. Es decir, no trabaja para el grupo porque hay un control externo que le obliga a hacerlo, sino porque el propio individuo realmente quiere hacerlo.

En resumen, se ha sugerido que la investigación sobre el rendimiento de un grupo debe focalizarse hacia una motivación más autónoma de los miembros del grupo (principalmente a la motivación que se denomina identificada), en lugar de la motivación extrínseca tradicionalmente analizada en la literatura de control de gestión (Adler y Chen, 2011; Gagné y Deci, 2005). Y que debe tener en cuenta procesos como la identidad social o comparación social, porque influyen de manera directa o indirecta en el rendimiento del grupo (Haslam, 2001; van Dick et al., 2009a,b).

### **A.2 La importancia de estudiar los sistemas de control de gestión**

Los sistemas de control de gestión se utilizan con el propósito de incrementar el valor de la organización a través del uso eficaz y eficiente de los recursos de la empresa (Berry et al., 2009; Sprinkle, 2003). Estos sistemas de control de gestión proveen de información contable y de control a los directivos y empleados de una organización, a través de herramientas como los sistemas de costes, presupuestos, sistemas de incentivos o medidas de rendimiento. La información de control se suministra para dos fines principales dentro de las organizaciones: (1) para proveer información necesaria para la planificación y toma de decisiones, (2) para motivar a los individuos hacia los objetivos de la organización (Sprinkle, 2003).

Esta tesis se centra en el estudio de la información de control para motivar a los individuos que trabajan en un entorno de equipo. Se han destacado dos aspectos fundamentales de los sistemas de control de gestión: el diseño y el uso (Chenhall y Morris, 1986; Malmi y Brown, 2008; Simons, 1995, 2000). El diseño se refiere a aspectos técnicos como qué características debe tener un sistema de costes (fijo, variable o de imputación racional, por ejemplo), o qué características debe tener un sistema de incentivos (fijo o variable, por ejemplo), o qué características debe tener una medida de rendimiento (información sobre el esfuerzo realizado, o sobre el

beneficio obtenido, o sobre las dos cosas, por ejemplo). El uso se refiere a la forma en la que esta información de control se utiliza dentro de la organización (Simons, 1995, 2000). Se han destacado dos tipos de usos en la literatura: diagnóstico e interactivo. El uso diagnóstico hace referencia al uso de la información de control para detectar desviaciones sobre objetivos predeterminados, analizar estas desviaciones y tomar decisiones para corregir estas desviaciones. Este uso diagnóstico envía la información de arriba abajo en las organizaciones (desde los directivos hacia la base) y la información que sube de abajo hacia arriba solo tiene como objetivo calcular y analizar desviaciones. El uso interactivo hace referencia a un uso de la información de control más abierto, buscando nuevas oportunidades e ideas dentro de la propia organización. Este uso se caracteriza porque la información fluye en la organización, de arriba a abajo pero también de abajo a arriba, e incluso traspasando barreras organizacionales (es decir, entre departamentos o áreas).

La investigación en control de gestión se ha centrado en analizar el mejor diseño y uso de la información de control para motivar a los individuos hacia los objetivos organizacionales. Ahora bien, esta investigación principalmente ha analizado la motivación de los empleados en entornos de trabajo individual, centrándose principalmente en cómo influir en la motivación extrínseca de los individuos. Prácticas como los sistemas de incentivos, informes de rendimiento individuales, o sistemas de control externos (por ejemplo, auditores) influyen en el rendimiento de los empleados. Ahora bien, cuando estas prácticas se utilizan en entornos de trabajo en equipo, no siempre producen los resultados esperados (Libby y Thorne, 2009; Román, 2009). Por ejemplo, se ha demostrado que los incentivos individuales (cada individuo es recompensado en función de lo que produce) no incrementan el rendimiento de un grupo de trabajo, mientras que los incentivos grupales (cada individuo es recompensando en función de lo que el grupo produce) sí influyen sobre el rendimiento. Aunque, según el tipo de tarea grupal, el incentivo de grupo puede provocar otros problemas, como el polizón (es decir, un miembro del equipo no se esfuerza, porque sabe que será recompensando gracias al esfuerzo realizado por sus compañeros) o el conflicto (cuando un miembro del grupo detecta que otros miembros reciben la misma recompensa a pesar de realizar menores niveles de esfuerzo).



### A.3 La importancia de estudiar la identidad social

La literatura de psicología social señala la identidad social como una de las variables más importantes que influye en el comportamiento de los individuos en grupo (Haslam, 2001). Según la Teoría de Identidad Social (Tajfel y Turner, 1986), el comportamiento de los individuos se puede describir como un continuo donde en un extremo está el comportamiento individual y en el otro extremo el comportamiento grupal. Esto quiere decir que hay situaciones donde el individuo se comporta siguiendo sus propias iniciativas, mientras que hay situaciones donde el individuo se comporta siguiendo el comportamiento de un grupo o categoría social con la cual él se identifica.

Un individuo tiene diferentes identidades sociales, es decir, se puede identificar con diferentes categorías sociales, como por ejemplo, con una organización (la universidad para la que trabaja), con un departamento (el departamento de la universidad para la que trabaja), con un grupo de investigación (el grupo de investigación al que pertenece) o con un género (femenino o masculino). Aunque un individuo se puede identificar con diferentes categorías sociales, el contexto determina, de alguna manera, qué categoría es la importante. Por ejemplo, un profesor de universidad que está asistiendo a un consejo de departamento donde se está eligiendo al director del departamento, tendrá activada en ese momento la identidad de miembro del departamento. La activación de esta identidad social hace que este individuo se comporte de forma similar a los otros miembros de la categoría social (es decir, de forma similar a los otros profesores del departamento).

El contexto influye en la identidad social de un individuo. Y las organizaciones pueden influir en el contexto en el que los individuos trabajan (Towry, 2003; Rowe, 2004). Se ha señalado que las prácticas contables y la información de control pueden activar contextos más cooperativos o más individuales. Es decir, si se utiliza información de control que remarque la importancia del grupo, sus objetivos y sus logros, entonces, se estará activando la categoría social de grupo. Y si se activa la categoría social de grupo en los individuos, se puede influir en el rendimiento del grupo porque la identificación de los miembros de un grupo con su propio grupo hace que éstos estén dispuestos a trabajar más y mejor por el grupo y sus objetivos (van Dick et al., 2009a,b).

## B) PREGUNTA DE INVESTIGACIÓN Y CONTRIBUCIONES

### B.1 Pregunta de investigación

Esta tesis se plantea la siguiente pregunta de investigación:

***¿Cómo deben ser diseñados y usados los sistemas de control de gestión en entornos de trabajo en equipo para incrementar la motivación de sus miembros y el rendimiento del grupo?***

Para contestar esta pregunta de investigación se han realizado tres estudios en esta tesis. El primer estudio se recoge en el capítulo 3 de la tesis. Analiza la relación entre el uso interactivo de los sistemas de control de gestión, la identidad social y la motivación identificada de los miembros de un grupo. Este estudio parte del modelo de compromiso en el lugar de trabajo de Meyer y Herscovitch (2001). El compromiso es un componente de la motivación identificada de los individuos. El modelo de este estudio se testó con un experimento realizado en Noviembre del año 2010 con 120 estudiantes de la Universidad Pablo de Olavide de Sevilla. Se realizó en el Laboratorio de Empresa y Economía Experimental. Esta tesis ha utilizado experimentos para validar sus hipótesis porque permiten analizar las relaciones causa-efecto de los modelos planteados. Los resultados del experimento validan las hipótesis del primer estudio. Es decir, las organizaciones pueden conseguir que los miembros de un grupo estén más motivados (es decir, estén dispuestos a esforzarse más por el grupo) haciendo un uso más interactivo de la información de control e incrementando el nivel de identidad social de los individuos con el grupo.

El segundo estudio se recoge en el capítulo 4 de la tesis y amplía los resultados del primer estudio. Analiza los efectos del uso interactivo de los sistemas de control de gestión y la identidad social en el rendimiento del grupo, vía la motivación

identificada de los miembros del grupo. Es decir, este segundo estudio plantea un modelo de mediación donde la variable mediadora es la motivación identificada de los individuos. Este modelo se valida con el mismo experimento que el primer estudio. Para contrastar el modelo de mediación se ha utilizado la técnica de mínimos cuadrados parciales (Chin, 1998) que permite validar modelos con muestras de tamaño pequeño. Los resultados confirman el modelo de mediación, es decir, el uso interactivo de los sistemas de control de gestión influye de manera indirecta en el rendimiento de un equipo, vía la motivación identificada de sus miembros. Así mismo, la identidad social también influye de manera indirecta en el rendimiento de un grupo, vía la motivación identificada.

El tercer estudio se recoge en el capítulo 5 de la tesis. Analiza una característica destacada en el diseño de los sistemas de control de gestión, que son los informes de rendimiento a nivel de grupo. En este estudio se analiza cómo un diferente diseño de la información de rendimiento puede influir en la motivación de los individuos cuando trabajan en grupo y por tanto en su rendimiento. El estudio plantea también un modelo de mediación, donde la variable mediadora es la comparación social que se produce entre los miembros de un grupo de trabajo a partir de la información compartida de los informes de rendimiento. El modelo plantea que los informes de rendimiento empujan un proceso de comparación social dentro del grupo, y este proceso influye en la motivación de los miembros del grupo y en su rendimiento. Además, el modelo propone un efecto directo de la identidad social sobre el rendimiento del grupo. Por último, el modelo también propone que la identidad social modera el efecto de los informes de rendimiento sobre el rendimiento del grupo. El modelo es testado con un segundo experimento realizado entre Abril y Octubre del año 2012 en la Universidad Pablo de Olavide de Sevilla, donde participaron 144 estudiantes. Los resultados del experimento avalan el modelo planteado en este tercer estudio. Es decir, los informes de rendimiento grupales influyen de manera directa e indirecta, vía el proceso de comparación social, en el rendimiento de un equipo de trabajo. Así mismo el efecto de los informes de rendimiento sobre el rendimiento del grupo es mayor en equipos con alta identidad social que en equipos con baja identidad social, porque los informes de rendimiento se convierten en normas de comportamiento a seguir en los equipos de alta identidad social.

## B.2 Contribuciones

Esta tesis realiza contribuciones a distintas literaturas como la literatura de control de gestión, de comportamiento organizacional y de psicología social. También realiza contribuciones para la gestión práctica de las organizaciones. En primer lugar, en relación a la literatura de control de gestión, esta tesis pone de manifiesto que un diferente uso de los sistemas de control de gestión influye en el comportamiento individual de los miembros de un grupo. En este sentido la aportación se centra en los efectos del uso interactivo a nivel individual, dado que tradicionalmente la literatura de control de gestión ha analizado los efectos del uso interactivo a nivel organizacional. Los resultados señalan que el efecto del uso interactivo sobre el comportamiento de los individuos no es directo, sino vía la motivación identificada de los individuos. Este modelo de mediación se ha podido plantear incorporando un modelo motivacional de la literatura de comportamiento organizacional a la literatura de contabilidad y control de gestión. En segundo lugar, esta tesis destaca que los informes de rendimiento influyen en el comportamiento individual dependiendo del diseño de información grupal que dispongan. Esta tesis no se centra en el efecto que estos informes produce sobre el individuo al sentirse controlado, sino en el efecto que estos informes produce sobre el individuo al conocer la información de una manera más agregada (el individuo solo recibe información del grupo) o de una manera más detallada (el individuo recibe información del grupo y de cada uno de los miembros del grupo). En ambos casos el individuo está siendo controlado por la organización, ahora bien, parece que el efecto cognitivo de los informes detallados puede ser negativo para la motivación del individuo. Si un miembro del equipo tiene información sobre sus colegas y esta información destaca que sus colegas están holgazaneando (*free-rider*), entonces el individuo puede decidir holgazanear también, lo que puede provocar un descenso continuado del rendimiento del grupo.

En relación a la literatura de psicología social, esta tesis destaca que la identidad social no siempre tiene un efecto directo sobre el rendimiento de un grupo. Si el contexto refuerza un contexto de grupo y cooperación, la identidad social influye sobre el rendimiento del grupo. Ahora bien, si el contexto refuerza en un grado menor el contexto de grupo, el efecto de la identidad social sobre el rendimiento del grupo es

menor o incluso puede desaparecer. Es importante tener en cuenta que las prácticas contables y de control de gestión (entiéndase presupuestos, sistemas de incentivos, sistemas de costes, medidas de rendimiento, etc.) pueden reforzar una identidad grupal, pero también pueden reforzar una identidad individual. Además, esta tesis pone de manifiesto que la información contable y de control puede convertirse en una señal sobre la norma de comportamiento del grupo. En esta tesis, los grupos que recibían información de su rendimiento a nivel detallado (es decir, donde los miembros del grupo podían comprobar que otros colegas estaban holgazaneando) y que tenían una alta identidad social, eran grupos que a lo largo del tiempo iban reduciendo cada vez más su rendimiento. El motivo es que los miembros del grupo acababan asumiendo que el comportamiento prototípico del grupo era holgazanear en lugar de cooperar.

En relación a la literatura de comportamiento organizacional, esta tesis destaca la importancia de los sistemas de control de gestión para reforzar los procesos de comparación social entre empleados. Tradicionalmente la comparación social se ha analizado en contextos de estudiantes (donde se compara el rendimiento académico), contextos de pacientes (donde se compara el estado de salud) o incluso en contexto de parejas (donde se compara lo que aporta cada uno a la familia). Habiéndose demostrado la importancia de este proceso sobre el comportamiento de las personas, pocos estudios han analizado cómo las organizaciones pueden empujar estos procesos entre los empleados de una organización. Esta tesis analiza cómo una práctica relacionada con la contabilidad y el control de gestión, los informes de rendimiento a nivel de grupo, pueden empujar este proceso de comparación social entre los miembros de ese grupo, y cómo esta comparación, puede producir diferentes efectos. Si los informes de rendimiento resaltan las diferencias entre los miembros del grupo y ponen de manifiesto que algunos individuos están holgazaneando, la comparación social produce efectos negativos en el tiempo, porque los miembros del grupo acaban siguiendo a los holgazanes. Tradicionalmente se ha destacado los efectos positivos de la comparación social, porque se suponía que los individuos se comparaban con los mejores empleados (los que se esfuerzan más) porque querían mejorar y ser como ellos. Pero los resultados aquí presentados señalan que los individuos en grupo también se comparan con los peores trabajadores (los que se esfuerzan menos, pero ganan lo mismo) y pueden decidir ser como ellos (es decir, reducir su esfuerzo). Por

tanto, los efectos del proceso de comparación social dentro de un equipo pueden ser dañinos para el rendimiento del grupo.

Por último, esta tesis realiza algunas aportaciones a nivel práctico. En primer lugar, esta tesis demuestra que se puede influir en la motivación de los individuos sólo cambiando el uso que se realiza de la información contable y de control. En los estudios aquí presentados no se ha utilizado ningún incentivo ni ningún sistema de control externo (por ejemplo, un auditor que vigile a los individuos) para influir en el comportamiento de los individuos. Los individuos actúan de diferente manera si sienten que participan más en las decisiones de la empresa y si reciben información que refuerce un contexto de grupo y de cooperación, en lugar de un contexto individual. Por otro lado, esta tesis señala que las organizaciones deben tener en cuenta el nivel de identidad social de los individuos que trabajan en ellas, sea con la propia organización, sea con sus departamentos o áreas. Si el nivel de identidad grupal es muy fuerte, no se debe diseñar información de control a nivel individual, poniendo de manifiesto comportamientos diferentes entre los empleados. Esta información de control entregada de forma periódica a los empleados, puede convertirse en una norma a seguir por ellos, donde existe una alta identidad grupal. Si unos compañeros holgazanean, pueden acabar todos los compañeros del departamento holgazaneando. Por tanto, las organizaciones deben tener en cuenta aspectos como la identidad social de los individuos y los procesos de comparación social, a la hora de diseñar prácticas y herramientas de control de gestión.

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